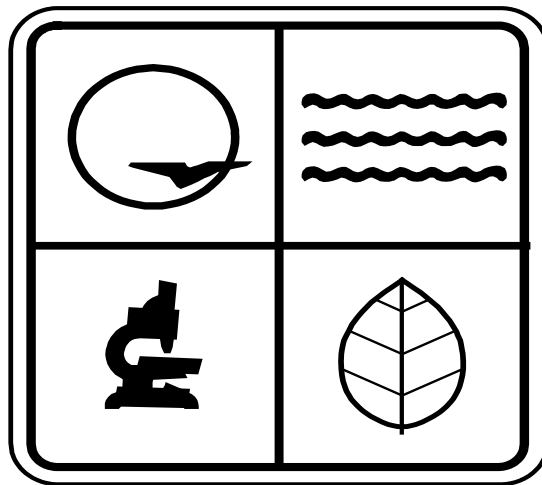


Missouri Department of Natural Resources Air Pollution Control Program

Supplemental Information: Resources, References and Tables to
assist in preparation of a Construction Permit Application



Revised February 8, 2006

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ACRONYMS

(Note: This is a list of acronyms used in the Air Pollution Control Program. It is intended for use as a reference and is not a complete list.)

AAQIA- Ambient Air Quality Impact Analysis
ALAPCO- Association of Local Air Pollution Control Officials
ANSI- American National Standards Institute (ASCII)
APCP- Air Pollution Control Program
AQA- Air Quality Analysis
AQCR- Air Quality Control Region
AQM- Air Quality Monitoring
AQMA- Air Quality Maintenance Area
AWMA- Air and Waste Management Association
BACT- Best Available Control Technology
BMP- Best Management Practices
BTU- British Thermal Unit
CAA- Clean Air Act
CAAA- Clean Air Act Amendments of 1990 (Federal)
CARB- California Air Resources Board
CAS- Chemical Abstract Service
CBI- Confidential Business Information
CC&P- Conference, Conciliation, and Persuasion
CCCA- Car Care for Clean Air (Enhanced, Centralized I/M)
CEM- Continuous Emissions Monitor
CenRAP- Central States Regional Air Planning Association
CenSARA- Central States Air Resources Agency
CFC- Chloro-fluorocarbons
CFR- Code of Federal Regulations
CO- Carbon Monoxide
CO₂- Carbon Dioxide
COMS-Continuous Opacity Monitoring System
CSR- Code of State Regulations
DLN- Dry Low NO_x
DNR- Department of Natural Resources
E-85- Ethanol blended at an 85 percent (85%) level with gasoline
E-95- Mixture of 95 percent (95%) Ethanol, 5 percent Gasoline
E-100- 100% Ethanol
EA- Environmental Assessment
EF - Emission Factor
EIQ- Emissions Inventory Questionnaire
EIS- Emissions Inventory Subsystem
EIS- Environmental Impact Statement
EPA- U.S. Environmental Protection Agency
ESP- Electrostatic Precipitator

ETBE- Ethyl Tertiary Butyl Ether
FGD - Flue gas desulfurization
FLAG- Federal Land Manager's Air Quality Related Values Workgroup
FLM- Federal Land Manager
FR- Federal Register
FOIA- Freedom of Information Act (5 USC 552)
FONSI- Finding of No Significant Impact
FTIR- Fourier Transform Infra-Red
GC- Gas Chromatography
GCAP- Gateway Clean Air Program
GIS- Geographic Information System
GPM- Gallons Per Minute
GPS- Global Positioning System
H₂SO₄- Sulfuric Acid
HAP- Hazardous Air Pollutants
HCl- Hydrogen Chloride
HF- Hydrogen Fluorides
IC- Internal Combustion
IGCC- Integrated Gasification Combined Cycle
I/M - Inspection/Maintenance
IR- Initial Review
kW Kilowatt
kWh- Kilowatt-hour
LAER- Lowest Achievable Emission Rate
MACC- Missouri Air Conservation Commission
MACT- Maximum Achievable Control Technology
MARC- Mid-America Regional Council
MDNR- Missouri Department of Natural Resources
MHDR- Maximum Hourly Design Rate
MLPA- Missouri Limestone Producers Association
MMBTU- Million British Thermal Unit
MoEIS- Missouri Emissions Inventory System
MOPETP- Missouri Performance Evaluation Test Procedure
MOREG- Missouri Register
MSDS- Material Safety Data Sheet
MTBE- Methyl Tertiary Butyl Ether
MW- Megawatt
NAA- Non-attainment Area
NAAQS- National Ambient Air Quality Standard
NAICS - North American Industry Classification System
NEPA- National Environmental Policy Act
NESHAPS- National Emissions Standards for Hazardous Air Pollutants
NH₃- Ammonia
NO₂- Nitrogen Dioxide

NOAA- National Oceanic and Atmospheric Administration
NOD- Notice of Deficiency
NOEE- Notice of Excess Emissions
NOV- Notice of Violation
NOx- Oxides of Nitrogen
NSPS- New Source Performance Standard
NSR- New Source Review
O3- Ozone
OAQPS- Office of Air Quality Planning and Standards, EPA
P70- Part 70 Operating Permit
PAMS- Permits Action Management System
Pb- Lead
PCB- Polychlorinated Biphenyl
PCE- Perchloroethylene
PE- Professional Engineer
PM 2.5 - Particulate Matter 2.5 microns
PM- Particulate Matter
PM10- Particulate Matter-10 microns
PPB- Parts Per Billion
PPM- Parts Per Million
PPMV- Parts Per Million Volume
PSC- Public Service Commission
PSD- Prevention of Significant Deterioration
PTE- Potential Emissions
QA- Quality Assurance
QAPP- Quality Assurance Project Plan
RACT- Reasonably Available Control Technology
RAL- Risk Assessment Level
RFG- Reformulated Gasoline
Region VII- EPA office serving Missouri
RSMo- Revised Statutes of Missouri
SCC- Source Classification Code
SCF- Standard Cubic Feet
SCR- Selective Catalytic Reduction
SIC- Standard Industrial Classification Code
SIP- State Implementation Plan
SMAL- Screen Model Action Level
SNCR- Selective Catalytic Reduction
SO2- Sulfur Dioxide
SOx- Sulfur Oxide
SOC- Synthetic Organic Chemical or Contaminants
SOCMI- Synthetic Organic Chemical Manufacturing Industry
SOS/ARD- Secretary of State's Office/Administrative Rules Division
STAPPA- State and Territorial Air Pollution Program Administrators

TDF- Tire Derived Fuel
TDS- Total Dissolved Solids
THC- Total Hydrocarbon
TPD- Tons Per Day
TPH- Tons Per Hour
TPY- Tons Per Year
UAM- Urban Air Shed Model
ULEV- Ultra-low Emission Vehicle
USEPA- United States Environmental Protection Agency
USFS- U.S. Forest Service
USFWS- U.S. Fish and Wildlife Service
USGS- U.S. Geological Survey
VMT- Vehicle Miles of Travel
VOC- Volatile Organic Compounds

GLOSSARY

Attainment Area:

An area to be considered to have air quality as good as or better than the national ambient air quality standards as defined in the Clean Air Act. An area may be an attainment area for one pollutant and a non-attainment area for others.

BACT:

Best Available Control Technology. An emission control system, change in work practices or processes which will result in the maximum reduction in each pollutant from a construction project. This limitation is based on the maximum degree of emission reduction which (considering energy, environmental, and economic impacts and other costs) is achievable through application processes and available methods, systems, and techniques. BACT is required for sources undergoing major permit review (10 CSR 10-6.060 – Section 8) for sources to be located in attainment areas.

Bottleneck:

A physical limitation which reduces the throughput of a process or piece of equipment to less than the manufacturer's rated capacity. It can be either upstream or downstream of the process. When maximum design rate is reduced for bottlenecks (see **MHDR**, following) the application must document how the bottleneck reduces process throughput.

Example: A paint booth is located in a furniture manufacturing plant. If the painting equipment is capable of applying more coatings per hour than is needed to paint the maximum output of the manufacturing plant, then the upstream production rate is a bottleneck and determines the paint booth's maximum design rate.

Breathing Loss:

Breathing loss occurs daily when a liquid is stored in a tank. Breathing loss for a product such as gasoline is due to evaporation and barometric pressure and/or temperature fluctuations. The frequency with which gasoline is withdrawn from the tank, allowing fresh air to enter and enhance evaporation, also has a major effect on the quantity of emissions. Also called standing loss.

CAAA:

The federal Clean Air Act as Amended in 1990.

CAS #:

Chemical Abstract Service Registry Number. This number is used for convenience because chemicals can have a variety of names.

CFR:

Code of Federal Regulations. A series of volumes where federal regulations have been codified (e.g., Title 40 = Protection of the Environment).

Capture Efficiency:

This represents the amount of the individual pollutant, expressed in percent, which is routed by the control system through the control device or devices. In other words, this is the portion of an emission point or unit's pollutants which goes through the control device. Capture efficiency can vary by pollutant.

Control Device:

Equipment or process used to remove or prevent air contaminants from being emitted from an air pollution generating process.

Control Efficiency:

The portion of an individual air pollutant which a control device prevents from escaping to the atmosphere, usually expressed in percent.

Control System:

The system which collects and controls the pollutant emissions from a process or installation. The system includes the control device (s) and such things as hoods, enclosures, etc. that capture and direct emissions to a control device or devices.

Criteria Pollutants:

The pollutants regulated by the Clean Air Act under Section 108 are:

PM ₁₀	-	Particulate Matter less than 10 microns in diameter
NO _x	-	Nitrogen Oxide Compounds
SO _x	-	Sulfur Oxide Compounds
VOC	-	Volatile Organic Compounds
Lead	-	Lead (Pb)
CO	-	Carbon Monoxide

***De minimis* Levels:**

The regulatory level of emissions from an installation at which the installation is considered significant. These levels are given on page 2 of the Instructions for the Application for Authority to Construct.

Emission Factor:

An average value that relates the quantity of a pollutant released to the atmosphere with the amount of activity associated with the process releasing that pollutant. Such factors can be used to estimate the emissions from various sources generating air pollution. An emission factor for natural gas combustion is 3.0 lbs of PM₁₀ per Million Cubic Feet (MMCF) of gas burned. An emission factor for a haul road can be 2.7 lbs. of PM₁₀ per Vehicle Miles Traveled (VMT). Emissions factors are frequently used to estimate emissions when reviewing an application.

EICP:

Emissions Information for Construction Permit. The complete description of all the proposed processes or equipment covered by the application, on forms provided by APCP. These forms are used by the permit reviewer to evaluate the emissions from the proposed project

EIQ:

Emission Inventory Questionnaire. This questionnaire provides air pollution information about individual facilities, and their emissions. This information is used by the APCP to evaluate the emission history of specific facilities during construction permit review, and to provide a basis for general air pollution planning work.

Emission Point:

Any specific point or area where an air pollutant is released from a process or operation into the ambient air. An emission point may have more than one **Emission Unit**. See the next item.

Example: Suppose the first emission point at a facility is a 30 foot stack which emits pollutants from a boiler, the stack rather than the boiler could be labeled EP1. The boiler would be the process producing air pollutants, so an appropriate Source Classification Code (SCC) would be chosen to reflect that the boiler is one process under this emission point. See discussion of **SCC**, following.

Emission Unit:

Any part or activity of an installation that emits or has the potential to emit any regulated air pollutant or any pollutant listed under section 112(b) of the Act (10 CSR 10-6.020). For the purposes of the construction permit application, an emission unit is a sub-point of an emission point from the EICP.

For example, Facility B lists Emission Point 1 as a stack that emits pollutants from two boilers and a kiln. The three emission units are boiler 1, boiler 2, and the kiln.

Facility:

For the purposes of this application only, facility and installation are interchangeable terms. (see **Installation** for further information). The term installation is defined in the Code of State Regulations.

Federal Register:

A daily publication of the federal government that contains, among other things, proposed and final rules.

FIPS:

Federal Information Procedures System. A standard, three-digit number assigned to each county of each state in the nation. The list of FIPS codes is given on page 57 of this document.

Hazardous Air Pollutant (HAP):

Any of the air pollutants listed in 10 CSR 10-6.020(3)(C). A list of these substances is included in this document on page 21.

Installation:

All emission points/unit operations that belong to the same industrial grouping (the same first two(2)-digits of the SIC code) that are located on one (1) or more contiguous or adjacent properties and are under the control of the same person (or persons under common control). This definition includes any activities that result in fugitive emissions, and any marine vessels' emissions while docked at the installation. (See 10 CSR 10 6.020 for regulatory definition)

LAER:

Lowest Achievable Emission Rate. Under the Clean Air Act, this is the rate of emissions that reflects (a) the most stringent emission limitations which is contained in the implementation plan of any state for such source unless the owner or operator of the proposed source demonstrates such limitations are not achievable; or (b) the most stringent emission limitation achieved in practice by the source's category. Application of this term does not permit a proposed new or modified source to emit pollutants in excess of existing new source performance standards.

MACT:

Maximum Achievable Control Technology (standard). In the 1990 CAAA, Congress directed the EPA to reduce emissions of HAPs from several industries specified in the Act. The EPA has developed and promulgated standards for many of these industries and published them. Each standard specifies the way that HAP emissions are to be reduced by the affected industry and prescribes what sources must do to comply. The promulgated MACT standards are found in 40 CFR Part 63. Development and implementation of MACT standards will continue well beyond year 2000. A list of sources affected by MACT standards and the promulgation schedule is included in this Supplemental Information Package on pages 44 through 50.

MHDR (Maximum Hourly Design Rate):

Maximum Hourly Design Rate is the maximum throughput that could be processed in one hour of continuous operation by the equipment at this emission point. The throughput and MHDR must be expressed in the same SCC (Source Classification Code) units. If specific equipment information on the MHDR is not available, contact the APCP for alternative methods to estimate the MHDR. In most cases, MHDR will be the manufacturer's rated capacity, but if there are physical bottlenecks that limit process throughput, these may reduce MHDR.

Example: Suppose the maximum capacity of a dump pit at a country elevator is 5,000 bushels an hour and wheat is the typical grain processed. Because the SCC units for grain receiving are in tons, the MHDR must be stated in terms of tons, not bushels.
 $5,000 \text{ bushels} \times 60 \text{ lbs/bushel} \div 2,000 \text{ lbs/ton} = 150 \text{ tons MHDR.}$

Molecular Weight:

The sum of the atomic weight of the constituent elements.

Example: The molecular weight of methane (CH₄) is $12.011 + 4(1.0079) = 16.0426$ grams. This follows from the periodic table observation that the atomic weights of carbon and hydrogen are 12.011 and 1.0079 grams, respectively.

NAAQS:

National Ambient Air Quality Standards. Air quality standards established by EPA that apply to outside air throughout the country.

NESHAP:

National Emission Standard for Hazardous Air Pollutant. These are standards promulgated by the EPA for certain industries specifying how the designated industries must reduce emissions of HAPs. The promulgated standards are found in 40 CFR Part 61. NESHAPs predate MACT standards and usually are less stringent. The Supplemental Information Package includes a list of sources subject to NESHAPS on page 51.

Nonattainment Area:

Geographic area that does not meet one or more of the National Ambient Air Quality Standards for the criteria pollutants designated in the Clean Air Act.

NSPS:

New Source Performance Standard. Section 111 of the Act required the EPA to establish these standards which are published in 40 CFR Part 60. Certain types of equipment/processes are required to meet specified emission standards and must conduct performance tests to demonstrate they meet emission limits. The standards have applicability criteria which always include a date of construction or reconstruction and often include a capacity floor. Many also have record keeping requirements. The Supplemental Information Package includes a list of sources subject to NSPS on page 53.

Plant #:

This is a four-digit identification number assigned to a facility by the APCP. Each facility within a county is assigned this unique identification number. The lowest plant number in a county will always be 0001 but the highest will be dependent upon the number of facilities in the county.

PM₁₀ (Particulate Matter less than ten microns):

Particulate Matter with an aerodynamic diameter of less than 10 microns, a criteria air pollutant. Examples include dust, smoke, fumes and mists. If an emission factor is not listed for PM₁₀, usually an emission factor can be estimated as 1/2 of the TSP (Total Suspended Particulate) emission factor.

PPM / PPB:

Parts per million / parts per billion, a way of expressing concentrations of pollutants in air, water, soil, biological tissues, food, or other products.

Potential Emissions:

The emission rates of any pollutant at maximum design capacity. Annual potential shall be based on the maximum annual rated capacity of the installation assuming continuous year-round operation, 8,760 hours per year. Federally enforceable permit conditions on the type of material combusted or processed, operating rates, hours of operation or the application of air pollution control equipment shall be used in determining the annual potential. Secondary emissions (emissions which occur or would occur as a result of the construction or operation of the installation or major modification but do not come from the installation or modification itself) do not count in determining annual potential.

Potential Emissions - Uncontrolled:

The amount of pollutants that could be emitted by a facility if all equipment is operated at the maximum hourly design rate for 24 hours per day, 7 days a week, 52 weeks per year (8760 hours) removing the effect of any pollution control devices, such as a baghouse, being taken into account.

Reasonably Available Control Technology (RACT):

The lowest emission limit that a particular source is capable of meeting by the application of control technology that is both reasonably available, as well as technologically and economically feasible. RACT usually is applied to existing sources in nonattainment areas.

RVP:

Reid Vapor Pressure. A measure of the volatility of petroleum products, such as gasoline, typically reported in pounds per square inch

SCC:

Source Classification Code. An eight-digit number associated with a unique process from which air pollutants are emitted. This is a useful way for emission factor information to be distributed. See the Resources Section of the Supplemental Information Package on page 58 for Internet availability of emission factors associated with SCC's.

SIC:

Standard Industrial Classification (four digits). This is a designation system established by the federal government. The Standard Industrial Classification was developed for use in the classification of establishments by type of activity in which they are engaged; for purposes of facilitating the collection, presentation, and analysis of data relating to establishments; and for promoting uniformity and comparability in the presentation of statistical data collected by various agencies of the United States Government, State

agencies, trade associations, and private research organizations. The SIC for *establishments* differ from a classification for *enterprises* (companies) or products. An enterprise consists of all establishments having more than 50% common direct or indirect ownership. The SIC is intended to cover the entire field of economic activities: agriculture, forestry, fishing, hunting, and trapping; mining; construction; manufacturing; transportation, communication, electric, gas, and sanitary services; wholesale trade; retail trade; finance, insurance, and real estate; personal, business, professional, repair, recreation, and other services; and public administration. General classifications are given in the Supplemental Information Package on page 39.

State Implementation Plan (SIP):

EPA approved state plans for establishment, regulation, and enforcement of air pollution standards.

Toxic Air Pollutant:

For the purposes of the construction permit application, toxic and **Hazardous Air Pollutant (HAP)** are interchangeable terms.

True Vapor Pressure:

The equilibrium partial pressure exerted by a volatile organic liquid, as defined by ASTM-D 2879 or as obtained from standard reference texts, typically expressed in units of pounds per square inch.

TSP:

Total Suspended Particulate. Total amount of fine particles (dust) suspended in the air. For construction permit purposes the APCP now determines permit applicability and reviews air pollution impacts using PM_{10} .

Vapor Pressure:

When liquids evaporate, gas vapor forms at the surface of the liquid and escapes. In a closed container, the vapor accumulates and creates pressure called vapor pressure. Each liquid exerts its own vapor pressure at a given temperature. As temperature increases, more vapor forms and vapor pressure increases.

Working Loss:

Evaporative loss occurring as a result of the filling and the withdrawal of liquid to and from a storage tank. Also called withdrawal loss.

Preconstruction Waivers

Construction permits are required for the construction of new air pollution sources, or the modification of existing air emission sources, prior to commencement of construction. Under certain conditions a facility may request a waiver, or variance, from this requirement prior to beginning construction in accordance with 10 CSR 10-6.060(1)(C). In order to qualify for a preconstruction prohibition waiver, a facility must meet all of the requirements on the following checklist. In particular, projects subject to section (7) or (8) or (9) reviews, without permit conditions, are not eligible for a waiver. If a preconstruction prohibition waiver is granted, construction on the facility may begin prior to the granting of the permit. Every effort is made to process these waivers in a timely manner.

The company receiving the waiver can not operate the constructed unit until, or unless, a valid permit is issued. In addition, the company receiving a waiver risks the expense and inconvenience of not being able to operate should the department decide to deny the permit.

To process an applicant's request for a preconstruction waiver the applicant should write a letter or include in their application the following information or statements:

- The applicant acknowledges that the project requested is not or will not be "major" (will not be subject to section (7) or (8) of 10 CSR 10-6.060, or Part C or D of the Act);
- The applicant states that construction at the site has not begun;
- The applicant accepts all liability associated with the possible denial of the permit application;
- The proposed schedule of construction activities has been provided; and
- The permit application has been submitted.

A sample letter is as follows:

**This is a sample letter format only. DO NOT COPY!
Retype on company letterhead, and submit with
signature of responsible official.**

RE: Pre-construction Prohibition Waiver

Dear Sirs:

Our company is requesting a waiver from the restriction to commence construction per the following rule reference:

10 CSR 10-6.060(1)(C). Construction/Operation Prohibited. No owner or operator shall commence construction or modification of any installation subject to this rule, begin operation after that construction or modification, or begin operation of any installation which has been shut down longer than five (5) years without first obtaining a permit from the permitting authority under this rule. For sources not subject to review under sections (7), (8), or (9), construction may be commenced if authorized by the director. A request for authorization must include: a signed waiver of any state liability; a complete list of activities to be undertaken; and, the applicant's full acceptance and knowledge of all liability associated with the possibility of denial of the permit application. A request will not be granted unless an application for permit approval under this rule has been filed. The waiver is not available to sources seeking federally enforceable permit restrictions to avoid review under sections (7)--(9).

I am the responsible official for the company as defined:

10 CSR 10-6.020(2)(R)12. Responsible official-Includes one of the following:

- A. The president, secretary, treasurer, or vice-president of a corporation in charge of a principal business function, or any other person who performs similar policy and decision-making functions for the corporation, or a duly authorized representative of such person if the representative is responsible for the overall operation of one or more manufacturing, production, or operating facilities applying for or subject to a permit and either:
 - (I) the facilities employ more than two hundred and fifty (250) persons or have a gross annual sales or expenditures exceeding twenty-five (25) million dollars (in second quarter 1980 dollars); or
 - (II) the delegation of authority to such a representative is approved in advance by the permitting authority;
- B. A general partner in a partnership or the proprietor in a sole proprietorship;
- C. Either a principal executive officer or ranking elected official in a municipality, state, federal, or other public agency. For the purpose of this part, a principal executive officer of a federal agency includes the chief executive officer having responsibility for the overall operations of a principal geographic unit of the agency; or
- D. The designated representative of an affected source in so far as actions, standards, requirements, or prohibitions under Title IV of the Act or the regulations promulgated thereunder are concerned; and the designated representative for any other purposes under part 70.

Construction related to this project has not begun. Our company understands fully, after reasonable inquiry, the consequences of beginning construction. Our company releases the state from any liability concerning the costs to the company for beginning construction should the state deny the application now pending for this project. I have included a detailed list of the construction activities and the associated schedule for each activity to be at the project site. Thank you in advance for your consideration of this waiver.

Sincerely,

Projects determined by APCP to be exempt from Construction Permitting

Certain types of equipment and activities are considered insignificant sources of air emissions and are exempt from construction permitting requirements. Exemptions do not apply to equipment or activities required by an operating permit or subject to federally mandated construction permitting requirements set forth in sections (7), (8) or (9) of 10 CSR 10-6.060.

A complete list of all exemptions can be found in 10 CSR 10-6.061 *Construction Permit Exemptions*. The following is an outline of common exemptions in the order that they appear in the rule. For specific information on these exemptions, please refer to the rule.

Exempt Emissions Units 10 CSR 10-6.061(3)(A)

1. Combustion equipment
 - Combustion equipment emitting only combustion products in an amount less than 150 pounds per day of any air contaminant for:
 - A) equipment with a capacity of less than 1,000,000 BTU's per hour of heat input, or
 - B) equipment with a capacity of less than 10,000,000 BTU's per hour of heat input, and burns only natural gas or liquefied petroleum gas
2. Establishments, systems, equipment and operations
 - A) office and commercial buildings
 - B) comfort air conditioning
 - C) transportation equipment
 - D) livestock markets and livestock operations
 - E) grain handling, storage and drying facilities
 - F) restaurants
 - G) wet sand and gravel production facilities
 - H-J) control equipment
 - K) residential wood heaters
 - L) laboratory equipment
 - M) recreational fireplaces
 - N) sewer exhausts
 - O) noncommercial incinerators
 - P) Miscellaneous Activities
 - I. Use of certain office equipment and products
 - II. Tobacco smoking rooms and areas.
 - III. Hand-held applicator equipment for hot melt adhesives with no VOC in the adhesive formula.
 - IV. Paper trimmers and binders.
 - V. Blacksmith forges, drop hammers, and hydraulic presses.
 - VI. Hydraulic and hydrostatic testing equipment.
 - VII. Environmental chambers, shock chambers, humidity chambers, and solar simulators provided no hazardous air pollutants are emitted by the process.

Q) Internal Combustion Engines

R) Quarries, Mineral Processing, and Biomass Facilities:

S) Kilns and Ovens

T) Food and Agricultural Equipment

- I. Any equipment used in agricultural operations to grow crops.
- II. Equipment used exclusively to slaughter animals. This exemption does not apply to other slaughterhouse equipment such as rendering cookers, boilers, heating plants, incinerators, and electrical power generating equipment.
- III. Commercial smokehouses or barbecue units in which the maximum horizontal inside cross sectional area does not exceed twenty square feet.
- IV. Equipment used exclusively to grind, blend package, or store tea, cocoa, spices or coffee.
- V. Equipment with the potential to dry, mill, blend, grind, or package less than one-thousand (1,000) pounds per year of dry food products such as seeds, grains, corn, meal, flour, sugar, and starch.
- VI. Equipment with the potential to convey, transfer, clean, or separate less than one thousand (1,000) tons per year of dry food products or waste from food production operations.
- VII. Storage equipment or facilities containing dry food products that are not vented to the outside atmosphere or which have the potential to handle less than one thousand (1,000) tons per year.
- VIII. Coffee, cocoa, and nut roasters with a roasting capacity of less than fifteen (15) pounds of beans or nuts per hour, and any stoners or coolers operated with these roasters.
- IX. Containers, reservoirs, tanks, or loading equipment used exclusively for the storage or loading of beer, wine, or other alcoholic beverages.
- X. Brewing operations at facilities with the potential to produce less than three million (3,000,000) gallons of beer per year.
- XI. Fruit sulfuring operations at facilities with the potential to produce less than ten (10) tons per year of sulfured fruits and vegetables.

U) Surface Preparation and Cleaning Equipment:

Batch solvent recycling equipment provided the recovered solvent is used primarily on site, the maximum heat input is less than one million (1,000,000) BTU per hour, and the batch capacity is less than one-hundred fifty (150) gallons. *10 CSR 10-6.060(1)(D)3..*

V) Surface Coating and Printing Equipment:

W) Material Working and Handling Equipment:

X) Liquid Storage and Loading Equipment:

Y) chemical processing equipment or operations

Z) Body repair and refinishing

3. Emission levels

Excluded Activities 10 CSR 10-6.061(3)(B)

1. Routine maintenance
2. Changes in a process or process equipment not involving installing, constructing, or re-constructing an emissions unit or associated air cleaning device
3. Like-kind replacements
- 4.
5. Miscellaneous activities
 - A) Plant maintenance
 - B) Batteries and battery charging stations
 - C) Fire suppression equipment
 - D) Laundry activities
 - E) Steam emissions
6. Miscellaneous surface preparation and cleaning activities
 - A) equipment and containers
 - B) Solvent wipe cleaning operations
 - C) abrasive blasting sources
 - D) blast cleaning equipment
 - E) Portable blast cleaning equipment
 - F) Non-refillable handheld aerosol cans

HAZARDOUS AIR POLLUTANTS

Chemical	CAS #	Screen Modeling Action Levels (tons/year)	Risk Assessment Levels ($\mu\text{g}/\text{m}^3$ unless otherwise noted)			VOC	PM10	Synonyms
			8-HR	24-HR	Annual			
ACETALDEHYDE	75-07-0	9		2	0.5	Yes	No	ACETIC ALDEHYDE, ALDEHYDE, ETHANAL, ETHYL ALDEHYDE
ACETAMIDE	60-35-5	1				Yes	No	ACETIC ACID AMIDE, ETHANAMIDE
ACETONITRILE	75-05-8	4	933.33			Yes	No	METHYL CYANIDE, ETHANENITRILE, CYANOMETHANE
ACETOPHENONE	98-86-2	1				Yes	No	ACETYL BENZENE, METHYL PHENYL KETONE AND HYPNONE
ACETYLAMINOFLUORINE, [2-]	53-96-3	0.005				No	No	N-2-FLUORENYL ACETAMIDE, N-FLUOREN-2-YL ACETAMIDE, 2-ACETAMIDOFUORENE
ACROLEIN	107-02-8	0.04		0.55	0.02	Yes	No	ACRYLALDEHYDE, ACRYLIC ALDEHYDE, ALLYL ALDEHYDE, PROPENAL
ACRYLAMIDE	79-06-1	0.02	0.0533			Yes	No	PROPENAMIDE, ACRYLIC AMIDE, ACRYLAMIDE MONOMER, ETHYLENECARBOXAMIDE
ACRYLIC ACID	79-10-7	0.6	80			Yes	No	PROPENOIC ACID, ETHYLENE CARBOXYLIC ACID, VINYLFORMIC ACID
ACRYLONITRILE	107-13-1	0.3		0.4	0.01	Yes	No	VINYL CYANIDE, CYANOETHYLENE, PROPENE NITRILE, AN
ALLYL CHLORIDE	107-05-1	1	0.533			Yes	No	1-CHLORO-2-PROPENE, 3-CHLOROPROPYLENE, CHLORALLYLENE, ALPHA-PROPYLENE
AMINOBI PHENYL, [4-]	92-67-1	1				No	No	BIPHENYLINE, P-PHENYLANILINE, XENYLAMINE, 4-AMINODIPHENYL, 4-BIPHENYLAMINE
ANILINE	62-53-3	1		0.2	0.1	Yes	No	AMINO BENZENE, PHENYLAMINE, ANILINE OIL, AMINOPHEN, ARYLAMINE
ANISIDINE, [ORTHO-]	90-04-0	1				Yes	No	O-METHOXYANILINE
ANTIMONY COMPOUNDS	20-00-8	5	6.67			No	Yes	ANTIMONY (TRIOXIDE, PENTACHLORIDE, TRIBROMIDE, TRICHLORIDE, TRIFLUORIDE)
ARSENIC COMPOUNDS (INORGANIC + ARSINE)	20-01-9	0.005	0.0267			No	Yes	ARSENIC (DIETHYL, DISULFIDE, PENTOXIDE, TRICHLORIDE, TRIOXIDE, TRISULFIDE)
ASBESTOS	1332-21-4			0.00004	0.000004	No	Yes	CHRYSTOTILE, AMOSITE, CROCIDOLITE, TREMOLITE, ANTHOPHYLLITE, ACTINOLITE
ASBESTOS, AMOSITE	1332-21-4			0.00004	0.000004	No	Yes	ASBESTOS FIBER, MINERAL SILICATE FIBER
ASBESTOS, CHRYSTOTILE	1332-21-4			0.00004	0.000004	No	Yes	ASBESTOS FIBER, MINERAL SILICATE FIBER
ASBESTOS, CROCIDOLITE	1332-21-4			0.00004	0.000004	No	Yes	ASBESTOS FIBER, MINERAL SILICATE FIBER
ASBESTOS, OTHER FORMS	1332-21-4			0.00004	0.000004	No	Yes	ASBESTOS FIBER, MINERAL SILICATE FIBER
BENZENE	71-43-2	2		1	0.12	Yes	No	BENZOL, PHENYL HYDRIDE, COAL NAPHTHA, PHENE, BENXOLE, CYCLOHEXATRIENE
BENZIDINE	92-87-5	0.0003	0.0001			No	No	4,4'-BIPHENYLDIAMINE, P-DIAMINODIPHENYL, 4,4'-DIAMINOBI PHENYL, BENZIDINE BASE
BENZOTRICHLORIDE	98-07-7	0.006				Yes	No	BENZOIC TRICHLORIDE, PHENYL CHLOROFORM, TRICHLOROMETHYLBENZENE
BENZYL CHLORIDE	100-44-7	0.1		14.08	0.94	Yes	No	ALPHA-CHLOROTOLUENE, TOLYL CHLORIDE
BERYLLIUM COMPOUNDS	20-03-1	0.008	0.0004			No	Yes	BERYLLIUM (ACETATE, CARBONATE, CHLORIDE, FLUORIDE, HYDROXIDE, NITRATE, OXIDE)

BIPHENYL, [1,1-]	92-52-4	10		0.34	0.09	Yes	No	DIPHENYL, PHENYLBENZENE
BIS(CHLOROETHYL)ETHER	111-44-4	0.06		6.9	0.03	Yes	No	DICHLOROETHYL ETHER, DICHLOROETHER, DICHLOROETHYL OXIDE, BCEE
BIS(CHLOROMETHYL)ETHER	542-88-1	0.0003	0.0007			No	No	BCME, SYM-DICHLOROMETHYL ETHER, DICHLOROMETHYL ETHER, OXYBIS-(CHLOROMETHANE)
BROMOFORM	75-25-2	10	0.889			No	No	TRIBROMOMETHANE, METHYL TRIBROMIDE
BROMOMETHANE	74-83-9	10		5.28	2.64	Yes	No	METHYL BROMIDE
BUTADIENE, [1,3-]	106-99-0	0.07		1.2	0.003	Yes	No	BIETHYLENE, BIVINYL, BUTADIENE MONOMER, DIVINYL ERYTHRENE, VINYLETHYLENE
BUTYLENE OXIDE, [1,2-]	106-88-7	1				No	No	1,2-EPOXYBUTANE, 1-BUTENE OXIDE, 1,2-BUTENE OXIDE
CADMIUM COMPOUNDS	20-04-2	0.01	0.0089			No	Yes	CADMIUM(DUST, FUME, ACETATE, CHLORATE, CHLORIDE, FLUORIDE, OXIDE, SULFATE, SULFIDE)
CALCIUM CYANAMIDE	156-62-7	10	0.0889			No	No	NITROLIME, CALCIUM CARBIMIDE, CYANAMIDE
CAPTAN	133-06-2	10	0.889			No	No	N-TRICHLOROMETHYLMERCAPTO-4-CYCLOHEXENE-1,2-DICARBOXIMIDE
CARBARYL	63-25-2	10	0.889			No	No	1-NAPHTHYL-N-METHYLCARBAMATE
CARBON DISULFIDE	75-15-0	1		740	700	Yes	No	CARBON BISULFIDE, DITHIOCARBONIC ANHYDRIDE
CARBON TETRACHLORIDE	56-23-5	1		3	0.07	Yes	No	TETRACHLOROMETHANE, PERCHLOROMETHANE
CARBONYL SULFIDE	463-58-1	5		0.1	0.1	No	No	CARBON OXIDE SULFIDE, CARBONOXYSULFIDE
CATECHOL	120-80-9	5	3.56			No	No	PYROCATECHOL, O-DIHYDROXYBENZENE
CHLORAMBEN	133-90-4	1		46.8		No	No	3-AMINO-2,5-DICHLOROBENZOIC ACID, AMBEN, AMIBEN*, VEGIBEN* (*TRADEMARK)
CHLORDANE	57-74-9	0.01		0.14	0.03	No	No	ENT9932, OCTACHLOR
CHLORINE	7782-50-5	0.1		3.95	3.95	No	No	BERTHOLITE
CHLOROACETIC ACID	79-11-8	0.1				Yes	No	MONOCHLOROACETIC ACID, CHLOROETHANOIC ACID
CHLOROACETOPHENONE, [2-]	532-27-4	0.06	4			No	No	PHENACYL CHLORIDE, CHLOROMETHYL PHENYL KETONE, TEAR GAS, MACE
CHLOROBENZENE	108-90-7	10		93.88	6.26	Yes	No	BENZENE CHLORIDE, MONOCHLOROBENZENE, CHLOROBENZOL, PHENYL CHLORIDE, MCB
CHLOROBENZILATE	510-15-6	0.4				No	No	ETHYL-4,4'-DICHLOROBENZILATE, ETHYL-4,4'-DICHLOROPHENYL GLYCOLLATE
CHLOROFORM	67-66-3	0.9		2.4	0.04	Yes	No	TRICHLOROMETHANE
CHLOROMETHYL METHYL ETHER	107-30-2	0.1				No	No	CMME, METHYL CHLOROMETHYL ETHER, CHLOROMETHOXYMETHANE, MONOCHLOROMETHYL ETHER
CHLOROPRENE	126-99-8	1		0.98	0.98	Yes	No	2-CHLORO-1,3-BUTADIENE, CHLOROBUTADIENE, NEOPRENE RUBBER COMPOUND
CHROMIUM COMPOUNDS	20-06-4	5		0.00083		No	Yes	CHROMIUM, CHROMIUM(II) COMPOUNDS, CHROMIUM(III) COMPDs, CHROMIUM(VI) COMPDs
COBALT COMPOUNDS	20-07-5	0.1	0.0089			No	Yes	COBALT(BROMIDE, CARBOYL, CHLORIDE, DIACETATE, FORMATE, NITRATE, OXIDE, SULFAMATE)
COKE OVEN EMISSIONS	8007-45-2	0.03	0.0267			No	No	COAL TAR, COAL TAR PITCH, COAL TAR DISTILLATE
CRESOL, [META-]	108-39-4	1	293.3			Yes	No	3-CRESOL, M-CRESYLIC ACID, 1-HYDROXY-3-METHYLBENZENE, M-HYDROXYTOLUENE

CRESOL, [ORTHO-]	95-48-7	1	293.3			Yes	No	2-CRESOL, O-CRESOLIC ACID, 1-HYDROXY-2-METHYLBENZENE, 2-METHYLPHENOL
CRESOL, [PARA-]	106-44-5	1		24.05	12.02	Yes	No	4-CRESOL, P-CRESYLIC ACID, 1-HYDROXY-4-METHYLBENZENE, 4-HYDROXYTOLUENE
CRESOLS (MIXED ISOMERS)	1319-77-3	1	293.3			Yes	No	CRESYLIC ACID
CUMENE	98-82-8	10		580		Yes	No	ISOPROPYL BENZENE, 2-PHENYLPROPANE
CYANIDE COMPOUNDS	20-09-7	5	66.67			No	No	CYANIDE (BARIUM, CHLORINE, FREE, HYDROGEN, POTASSIUM, SILVER, SODIUM, ZINC)
DDE	72-55-9	0.01				No	No	DICHLORODIPHENYLDICHLOROETHYLENE
DI(2-ETHYLHEXYL) PHTHALATE, (DEHP)	117-81-7	5		1.36	0.77	No	No	DI(2-ETHYLHEXYL)PHTHALATE, DOP, DI-SEC-OCTYL PHTHALATE
DIAMINOTOLUENE, [2,4-]	95-80-7	0.02				Yes	No	2,4-TOLUENE DIAMINE, 3-AMINO-PARA-TOLUIDINE, 5-AMINO-ORTHO-TOLUIDINE
DIAZOMETHANE	334-88-3	1	0.071			No	No	AZIMETHYLENE, DIAZIRINE
DIBENZOFURAN	132-64-9	5				No	No	DIPHENYLENE OXIDE
DIBROMO-3-CHLOROPROPANE, [1,2-]	96-12-8	0.01				No	No	DBCP
DIBROMOETHANE, [1,2-]	106-93-4	0.1				Yes	No	ETHYLENE DIBROMIDE, ETHYLENE BROMIDE, SYM-DIBROMOETHANE
DIBUTYL PHTHALATE	84-74-2	10	13.33			No	No	DBP, DIBUTYL 1,2-BENZENEDICARBOXYLATE, DI-N-BUTYL PHTHALATE
DICHLOROBENZENE, [1,4-]	106-46-7	3		18	0.18	Yes	No	1,4-DICHLORO-P-DCB, 1,4-DCB, PDB, PDCB
DICHLOROBENZIDENE, [3,3-]	91-94-1	0.2				No	No	4,4'-DIAMINO-3,3'-DICHLOROBIPHENYL, 3,3'-DICHLOROBIPHENYL-4,4'-DIAMINE, DCB
DICHLOROETHANE, [1,1-]	75-34-3	1	2160			No	No	ETHYLIDENE DICHLORIDE, 1,1-ETHYLIDENE DICHLORIDE, ASYMMETRICAL DICHLOROETHANE
DICHLOROETHANE, [1,2-]	107-06-2	0.8		11.01	0.04	Yes	No	ETHYLENE DICHLORIDE, 1,2-DICHLOROETHANE, GLYCOL DICHLORIDE, ETHYLENE CHLORIDE
DICHLOROETHYLENE, [1,1-]	75-35-4	0.4		1.08	0.02	Yes	No	VINYLDICHLORIDE, DCE, VDC
DICHLOROMETHANE	75-09-2	10		20	0.24	Yes	No	METHYLENE CHLORIDE, METHANE DICHLORIDE
DICHLOROPHENOXY ACETIC ACID, [2,4-]	94-75-7	10	1.78			No	No	2,4-D ACID
DICHLOROPROPANE, [1,2-]	78-87-5	1		0.9	0.05	Yes	No	PROPYLENE DICHLORIDE
DICHLOROPROPENE, [1,3-]	542-75-6	1	66.67			No	No	1,3-DICHLOROPROPYLENE, ALPHA-CHLORALLYL CHLORIDE
DICHLORVOS	62-73-7	0.2	0.178			No	No	DDVP, 2,2-DICHLOROVINYLDIMETHYLPHOSPHATE
DIETHANOLAMINE	111-42-2	5		31		No	No	BIS(2-HYDROXYETHYL)AMINE, 2,2'-DIHYDROXYDIETHYLAMINE, DI(2-HYDROXYETHYL)AMINE
DIETHYL SULFATE	64-67-5	1				Yes	No	DIETHYL ESTER SULFURIC ACID, ETHYL SULFATE
DIMETHOXYBENZIDINE, [3,3-]	119-90-4	0.1				No	No	FAST BLUE B BASE, DIANISIDINE, O-DIANISIDINE
DIMETHYL BENZIDINE, [3,3-]	119-93-7	0.008				No	No	O-TOLIDINE, BIANISIDINE, 4,4'-DIAMINO-3,3'-DIMETHYLBIPHENYL, DIAMINODITOLYL
DIMETHYL CARBAMOYL CHLORIDE	79-44-7	0.02				No	No	DMCC, CHLOROFORMIC ACID DIMETHYL AMIDE, DIMETHYL CARBAMYL CHLORIDE
DIMETHYL FORMAMIDE	68-12-2	1		6	3	Yes	No	DMF, FORMYLDIMETHYLAMINE
DIMETHYL HYDRAZINE, [1,1-]	57-14-7	0.008	0.1778			Yes	No	UNSYMMETRICAL DIMETHYLHYDRAZINE, UDMH, Dimazine

DIMETHYL PHTHALATE	131-11-3	10		40		No	No	PHTHALIC ACID, DIMETHYL ESTER, DIMETHYL 1,2-BENZENEDICARBOXYLATE, DMP
DIMETHYL SULFATE	77-78-1	0.1	0.0889			Yes	No	SULFURIC ACID DIMETHYL ESTER, METHYL SULFATE, DMS
DIMETHYLAMINOAZOBENZENE, [4-]	60-11-7	1				No	No	N,N-DIMETHYL-P-PHENYLAZO-ANILINE, BENZENEAZO DIMETHYLANILINE
DIMETHYLANILINE, [N-N-]	121-69-7	1	333.33			Yes	No	N,N-DIETHYL ANILINE, N,N-DIMETHYLPHENYLAMINE, DMA
DINITRO-O-CRESOL, [4,6-]	534-52-1	0.1	2.67			No	No	DNOC, 3,5-DINITRO-O-CRESOL, 2-METHYL-4,6-DINITROPHENOL
DINITROPHENOL, [2,4-]	51-28-5	1	2.67			Yes	No	DNP
DINITROTOLUENE, [2,4-]	121-14-2	0.02	0.267			No	No	DINITROTOLUOL, DNT, 1-METHYL-2,4-DINITROBENZENE
DIOXANE, [1,4-]	123-91-1	6		24.49	0.24	Yes	No	1,4-DIETHYLENEOXIDE, DIETHYLENE ETHER, P-DIOXANE
DIPHENYLHYDRAZINE, [1,2-]	122-66-7	0.09	0.045			No	No	HYDRAZOBENZENE, N,N'-DIPHENYLHYDRAZINE, N,N'-BIANILINE, 1,1'-HYDRODIBENZENE
DIPHENYLMETHANE DIISOCYANATE, [4,4-]	101-68-8	0.1	2.667			Yes	No	METHYLENE BIS(PHENYLISOCYANATE), METHYLENE DIPHENYL DIISOCYANATE, (MDI)
EPICHLOROHYDRIN	106-89-8	2		8	0.08	Yes	No	1-CHLORO-2,3-EPOXYPROPANE, EPI, CHLOROPROPYLENE OXIDE, CHLOROMETHYLOXIRANE
ETHYL ACRYLATE	140-88-5	1		0.56	0.28	Yes	No	ETHYL PROPENOATE, ACRYLIC ACID ETHYL ESTER
ETHYL BENZENE	100-41-4	10		360	300	Yes	No	ETHYLBENZOL, PHENYLETHANE, EB
ETHYL CHLORIDE	75-00-3	10		717.55	358.78	Yes	No	CHLOROETHANE, MONOCHLOROETHANE, HYDROCHLORIC ETHER
ETHYLENE GLYCOL	107-21-1	10		34.5	34.5	Yes	No	1,2-ETHANEDIOL, GLYCOL ALCOHOL, GLYCOL, EG
ETHYLENE IMINE [AZIRIDINE]	151-56-4	0.003	0.178			No	No	AZACYCLOPROPANE, DIMETHYLENEIMINE, ETHYLENIMINE, VINYLAMINE, AZIRANE
ETHYLENE OXIDE	75-21-8	0.1			0.1	Yes	No	1,2-EPOXYETHANE, OXIRANE, DIMETHYLENE OXIDE, ANPROLENE
ETHYLENE THIOUREA	96-45-7	0.6				No	No	2-IMIDAZOLIDINETHIONE, ETU
FORMALDEHYDE	50-00-0	2		0.8	0.08	Yes	No	OXYMETHYLENE, FORMIC ALDEHYDE, METHANAL, METHYLENE OXIDE, OXOMETHANE
GLYCOL ETHER(DIETHYLENE GLYCOL ETHERS)	20-10-0	5		450		No	No	
HEPTACHLOR	76-44-8	0.02		0.14	0.001	No	No	1,4,5,6,7,8,8A-HEPTACHLORO-3A,4,7,7A-TETRAHYDRO-4,7-METHANOINDIENE
HEXACHLOROBENZENE	118-74-1	0.01				Yes	No	PERCHLOROBENZENE, HCB, PENTACHLOROPHENYL BENZENE, PHENYL PERCHLORYL
HEXACHLOROBUTADIENE	87-68-3	0.9	0.45			No	No	PERCHLOROBUTADIENE, 1,3-HEXACHLOROBUTADIENE, HCB
HEXACHLOROCYCLOPENTADIENE	77-47-4	0.1		0.006	0.006	No	No	HCCPD, HEX
HEXACHLOROETHANE	67-72-1	5		0.53	0.25	Yes	No	PERCHLOROETHANE, CARBON HEXACHLORIDE, HCE, 1,1,1,2,2,2-HEXACHLOROETHANE
HEXAMETHYLENE,-1,6-DIISOCYANATE	822-06-0	0.02		0.03	0.01	No	No	1,6-DIISOCYANATOHEXANE, 1,6-HEXANEDIOL DISOCYANATE
HEXAMETHYLPHOSPHORAMIDE	680-31-9	0.01				No	No	HEXAMETHYLPHOSPHORIC TRIAMIDE, HEMPA, HEXAMETAPOL, HEXAMETHYLPHOSPHORAMIDE
HEXANE, [N-]	110-54-3	10		4200	420	No	No	HEXANE, NCI-c60571
HYDRAZINE	302-01-2	0.004		0.007	0.002	No	No	METHYLHYDRAZINE, DIAMIDE, DIAMINE, HYDRAZINE BASE
HYDROGEN CHLORIDE	7647-01-0	10		7	7	No	No	HYDROCHLORIC ACID, MURIATIC ACID, ANHYDROUS HYDROCHLORIC ACID

HYDROGEN FLUORIDE	7664-39-3	0.1		0.68	0.34	No	No	HYDROFLUORIC ACID GAS, FLUOROHYDRIC ACID GAS, ANHYDROUS HYDROFLUORIC ACID
HYDROQUINONE	123-31-9	1	26.67			Yes	No	QUINOL, HYDROQUINOL, P-DIPHENOL, 1,4-BENZENEDIOL, HYDROCHINONE, ARCTUVIN
ISOPHORONE	78-59-1	10	333.33			Yes	No	3,3,5-TRIMETHYL-2-CYCLOHEXENE-1-ONE, TRIMETHYLCYCLOHEXONE, ISOACETOPHORONE
LEAD COMPOUNDS	20-11-1	0.01	2			No	Yes	LEAD (ACETATE, ARSENIATE, CHLORIDE, FLUORIDE, IODIDE, NITRATE, SULFATE, SULFIDE)
LINDANE [GAMMA-HEXACHLOROCYCLOHEXANE]	58-89-9	0.01		0.14	0.003	No	No	BENZENE HEXACHLORIDE-GAMMA ISOMER
MALEIC ANHYDRIDE	108-31-6	1		0.27	0.14	Yes	No	2,5-FURANEDIENE, CIS-BUTENEDIOLIC ANHYDRIDE, TOXILIC ANHYDRIDE
MANGANESE COMPOUNDS	20-12-2	0.8	13.33			No	Yes	MANGANESE (ACETATE, CHLORIDE, DIOXIDE, (II)-OXIDE, (III)-OXIDE, (II)-SULFATE)
MERCURY COMPOUNDS (ALKYL & ARYL)	20-13-3	0.01		0.003	0.0014	No	No	MERCURY COMPOUNDS (METHYL-, ETHYL-, PHENYL-)
MERCURY COMPOUNDS (INORGANIC)	20-13-3	0.01		0.14	0.01	No	No	MERCURY (CHLORIDE, CYANIDE, (I,II)-[BROMIDE, IODIDE, NITRATE, SULFATE], OXIDE)
METHANOL	67-56-1	10		600	7.13	Yes	No	METHYL ALCOHOL, CARBINOL, WOOD ALCOHOL, WOOD SPIRIT
METHOXYCHLOR	72-43-5	10	133.3			No	No	2,2-BIS(P-METHOXYPHENYL)-1,1,1-TRICHLOROETHANE, DIMETHOXY-DDT
METHYL CHLORIDE	74-87-3	10		105		Yes	No	CHLOROMETHANE, MONOCHLOROMETHANE
METHYL ETHYL KETONE	78-93-3	10		360	10	Yes	No	2-BUTANONE, MEK, BUTANONE, ETHYL METHYL KETONE
METHYL HYDRAZINE	60-34-4	0.06	0.0622			No	No	MONOMETHYLHYDRAZINE, HYDROZOMETHANE, 1-METHYLHYDRAZINE
METHYL IODIDE	74-88-4	1	1.778			No	No	IDOMETHANE
METHYL ISOBUTYL KETONE	108-10-1	10		84	55.7	Yes	No	HEXONE, 4-METHYL-2-PENTANONE, ISOBUTYL METHYL KETONE, MIBK
METHYL ISOCYANATE	624-83-9	0.1	0.667			No	No	ISOCYANATOMETHANE, ISOCYANIC ACID, METHYL ESTER
METHYL METHACRYLATE	80-62-6	10		22.27	22.27	Yes	No	METHYL 2-METHYL-2-PROPENOATE, METHACRYLIC ACID METHYL ESTER, MME
METHYL TERT-BUTYL ETHER	1634-04-4	10				No	No	MTBE
METHYLENE BIS(2-CHLOROANILINE), [4,4-]	101-14-4	0.2	0.0391			No	No	CURENE, MOCA, 4,4'-DIAMINO-3,3'-DICHLORODIPHENYLMETHANE
METHYLENEDIANILINE, [4,4-]	101-77-9	1	10.67			Yes	No	4,4'-DIAMINODIPHENYLMETHANE, DDM, MDA, BIS(4-AMINOPHENYL)METHANE, DAPM
MINERAL FIBERS	TP14					No	Yes	
NAPHTHALENE	91-20-3	10		15.7	14.25	No	No	NAPHTHALIN, MOTH FLAKE, TAR CAMPHOR, WHITE TAR, MOTH BALLS
NICKEL COMPOUNDS	20-14-4	1	1.33			No	Yes	NICKEL (ACETATE, AMMONIUM SULFATE, CHLORIDE, HYDROXIDE, NITRATE, OXIDE, SULFATE)
NITROBENZENE	98-95-3	1		13.69	6.84	Yes	No	NITROBENZOIL, OIL OF MIRBANE, OIL OF BITTER ALMONDS
NITROBIPHENYL, [4-]	92-93-3	1				No	No	4-NITRODIPHENYL, P-NITROBIPHENYL, P-NITROPHENYL, PNB
NITROPHENOL, [4-]	100-02-7	5				No	No	4-HYDROXYNITROBENZENE, PARA-NITROPHENOL
NITROPROPANE, [2-]	79-46-9	1	6.22			Yes	No	DIMETHYLNITROMETHANE, SEC-NITROPROPANE, ISONITROPROPANE, NITROISOPROPANE
NITROSO-N-METHYLUREA, [N-]	684-93-5	0.0002			0.00003	No	No	N-METHYL-N-NITROSOUREA, N-NITROSO-N-METHYLCARBAMIDE

NITROSODIMETHYLAMINE, [N-]	62-75-9	0.001	0.0007			No	No	DIMETHYLNITROSAMINE, DMN, DMNA
NITROSOMORPHOLINE, [N-]	59-89-2	1				No	No	4-NITROSOMORPHOLINE
PARATHION	56-38-2	0.1	0.0178			No	No	DNTP, MONOTHIOPHOSPHATE, DIETHYL-p-NITROPHENYL
PCB [POLYCHLORINATED BIPHENYLS]	1336-36-3	0.009		0.003	0.0005	No	No	AROCLORS.
PENTACHLORONITROBENZENE	82-68-8	0.3		1.2		No	No	QUINTOBENZENE, PCNB, QUINIOZENE
PENTACHLOROPHENOL	87-86-5	0.7		0.5	0.01	No	No	PCP, PENCHOROL, PENTACHLOROPHENATE, 2,3,4,5,6-PENTACHLOROPHENOL
PHENOL	108-95-2	0.1		45	9.5	Yes	No	CARBOLIC ACID, PHENIC ACID, PHENYLIC ACID, PHENYL HYDRATE, HYDROXYBENZENE
PHENYLENEDIAMINE, [PARA-]	106-50-3	10	0.0178			Yes	No	P-AMINOANILINE, 1,4-DIAMINO BENZENE, BENZENEDIAMINE, PARA
PHOSGENE	75-44-5	0.1	5.33			Yes	No	CARBONYL CHLORIDE, CARBON OXYCHLORIDE, CARBONIC ACID DICHLORIDE
PHOSPHINE	7803-51-2	5	5.33			No	No	HYDROGEN PHOSPHIDE, PHOSPHORETTED HYDROGEN, PHOSPHORUS TRIHYDRIDE
PHOSPHOROUS (YELLOW OR WHITE)	7723-14-0	0.1	1.33			No	No	COMMON SENSE COCKROACH AND RAT PREPARATIONS
PHTHALIC ANHYDRIDE	85-44-9	5		1.65	0.82	Yes	No	PHTHALIC ACID ANHYDRIDE, BENZENE-O-DICARBOXYLIC ACID ANHYDRIDE, PHTHALANDIONE
POLYCYCLIC ORGANIC MATTER	TP15	0.01		0.16	0.017	No	No	PAH, POLYAROMATIC HYDROCARBONS, POM
PROPANE SULTONE, [1,3-]	1120-71-4	0.03				No	No	1,2-OXATHIOLANE-2,2-DIOXIDE, 3-HYDROXY-1-PROPANESULPHONIC ACID SULTONE
PROPIOLACTONE, [BETA-]	57-57-8	0.1	0.2667			No	No	2-OXETANONE, PROPIOLACTONE, BPL, 3-HYDROXY-B-LACTONE-PROPANOIC ACID
PROPIONALDEHYDE	123-38-6	5				Yes	No	PROPANAL, PROPYL ALDEHYDE, PROPIONIC ALDEHYDE
PROPOXUR [BAYGON]	114-26-1	10	6.67			No	No	O-ISOPROPOXYPHENOL METHYLCARBAMATE, 2-(1-METHYLOXY)PHENOL METHYLCARBAMATE
PROPYLENE OXIDE	75-56-9	5		6	0.3	Yes	No	1,2-EPOXYPROPANE, METHYLETHYLENE OXIDE, METHYL OXIRANE, PROPENE OXIDE
PROPYLENEIMINE, [1,2-]	75-55-8	0.003	0.889			No	No	2-METHYL AZIRIDINE, 2-METHYL AZACYCLOPROPANE, METHYLETHYLENEIMINE
QUINOLINE	91-22-5	0.006				No	No	1-AZANAPHTHALENE, 1-BENZAZINE, BENZO(B)PYRIDINE, CHINOLEINE, LEUCOLINE
QUINONE	106-51-4	5	0.071			Yes	No	BENZOQUINONE, CHINONE, P-BENZOQUINONE, 1,4-BENZOQUINONE
RADIONUCLIDES (INCLUDING RADON)	TP16					No	Yes	
SELENIUM COMPOUNDS	20-16-6	0.1		0.54		No	Yes	SELENIUM (METAL, DIOXIDE, DISULFIDE, HEXAFLUORIDE, MONOSULFIDE)
STYRENE	100-42-5	1		2240	333	Yes	No	CINNAMENE, CINNAMOL, PHENETHYLENE, PHENYLETHYLENE, VINYL BENZENE
STYRENE OXIDE	96-09-3	1				No	No	EPOXYETHYLBENZENE, PHENYLETHYLENE OXIDE, PHENYL OXIRANE, EPOXYSTYRENE
TETRACHLORODIBENZO-P-DIOXIN, [2,3,7,8-]	1746-01-6					No	No	TCDD

TETRACHLOROETHANE, [1,1,2,2-]	79-34-5	0.3		18.67	0.02	Yes	No	SYM-TETRACHLOROETHANE, ACETYLENE TETRACHLORIDE, ETHANE TETRACHLORIDE
TETRACHLOROETHYLENE	127-18-4	10		2	0.02	Yes	No	PERCHLOROETHYLENE, CARBON DICHLORIDE, ETHYLENE TETRACHLORIDE, PCE, PERCLEN
TITANIUM TETRACHLORIDE	7550-45-0	0.1				No	No	TITANIUM CHLORIDE
TOLUENE	108-88-3	10		400	20	Yes	No	TOLUOL, METHYLBENZENE, PHENYLMETHANE, METHYLBENZOL
TOLUENE DIISOCYANATE, [2,4-]	584-84-9	0.1		0.1	0.1	Yes	No	TDI, TOLYLENE DIISOCYANATE, DIISOCYANATOLUENE
TOLUIDINE, [ORTHO-]	95-53-4	4		2.38	0.17	Yes	No	ORTHO-AMINOTOLUENE, ORTHO-METHYLANILINE, 1-METHYL-1,2-AMINOBENZENE
TOXAPHENE	8001-35-2	0.01	0.0889			No	No	CHLORINATED CAMPHENE, CAMPHECHLOR, POLYCHLORCAMPHENE
TRICHLOROBENZENE, [1,2,4-]	120-82-1	10	533.33			Yes	No	UNSYM-TRICHLOROBENZENE
TRICHLOROETHANE, [1,1,1-]	71-55-6	10		4500	1038.37	No	No	METHYL CHLOROFORM
TRICHLOROETHANE, [1,1,2-]	79-00-5	1		14.84	0.06	Yes	No	VINYL TRICHLORIDE, BETA-TRICHLOROETHANE
TRICHLOROETHYLENE	79-01-6	10		64.3	0.61	Yes	No	ETHYLENE TRICHLORIDE, ETHINYL TRICHLORIDE, TRICHLOROETHENE, TRI, TCE
TRICHLOROPHENOL, [2,4,5-]	95-95-4	1		1.6		No	No	2,4,5-TCP
TRICHLOROPHENOL, [2,4,6-]	88-06-2	6			0.16	No	No	2,4,6-TCP
TRIETHYLAMINE	121-44-8	10		1	0.7	Yes	No	N,N-DIETHYLETHANAMINE, TEA, (diethylamino)ethane
TRIFLURALIN	1582-09-8	9		73.8		No	No	2,6-DINITRO-N-N-DIPROPYL-4-(TRIFLUOROMETHYL)BENZENEAMINE
TRIMETHYLPENTANE, [2,2,4-]	540-84-1	5		3336		No	No	ISOBUTYLTRIMETHYLETHANE, ISOCTANE
URETHANE [ETHYL CARBAMATE]	51-79-6	0.8				No	No	ETHYL URETHANE, O-ETHYLURETHANE, LEUCOTHANE, NSC 746, URETHAN
VINYL ACETATE	108-05-4	1		30	8	Yes	No	ACETIC ACID VINYL ESTER, VINYL ACETATE MONMER, ETHENYL ETHANOATE
VINYL BROMIDE	593-60-2	0.6	3.56			No	No	BROMOETHYLENE, BROMOETHENE
VINYL CHLORIDE	75-01-4	0.2		3.47	0.38	Yes	No	CHLOROETHYLENE, CHLOROETHENE, MONOCHLOROETHYLENE
XYLENE, [META-]	108-38-3	10		250	11.8	No	No	M-DIMETHYLBENZENE, 1,3-XYLENE, 1,3-DIMETHYLBENZENE, M-XYLOL
XYLENE, [ORTHO-]	95-47-6	10		250	11.8	Yes	No	O-XYLOL, O-DIMETHYLBENZENE, O-METHYLTOLUENE, 1,2-XYLENE, 1,2-DIMETHYLBENZENE
XYLENE, [PARA-]	106-42-3	10		250	11.8	Yes	No	P-DIMETHYLBENZENE, P-METHYLTOLUENE, 1,4-XYLENE, 1,4-DIMETHYLBENZENE, P-XYLOL
XYLENES (MIXED ISOMERS)	1330-20-7	10		250	11.8	Yes	No	AROMATIC HYDROCARBONS MIXED, DIMETHYLBENZENE,

The emission levels in this table change from time to time as new information becomes available, so be sure that this is the most recent table. This table was created on January 4, 2000.

In the event that an applicant does not feel that the current Risk Assessment Levels are appropriate, they are encouraged to ask the APCP to review the levels. Such a review request should be made to APCP's Construction Permit Unit, either

as part of a construction permit application or preceding an application. The request will be forwarded to the APCP's Air Quality Analysis Section for review by the staff toxicologist. It is expected that the applicant will work with the toxicologist by providing appropriate information to support the case for RAL review. The toxicologist, in conjunction with the Missouri Department of Health, will then determine the appropriate RAL for the particular hazardous air pollutant. This new RAL will be incorporated into the table, and made available for future applicants.

In addition, there may be times that new toxicological information presents itself to the APCP, and changes to this table may be made independent of applicant request.

AIR QUALITY SCREENING ANALYSIS CONSTRUCTION PERMITTING GUIDANCE

Screening Analysis:

The procedures outlined in this document are intended to be supplemental guidance for new sources and modifications not subject to major review. Projects subject to major review have additional modeling and monitoring requirements. If your project is subject to major review we strongly recommend that you schedule a pre-application meeting with New Source Review Permit Unit Staff [(573) 751-4817]. Also, feel free to call with specific questions regarding this guidance.

This guidance was assembled so you would have the tools to estimate the air quality impact of your proposed project. This process is particularly important for Hazardous Air Pollutants. The regulations require an air quality analysis for many projects. Many applicants want to be sure that their proposed project will meet the air quality test, so they perform the analysis themselves and include it with their application. They see this as a way to avoid finding themselves back in the engineering phase of the project after the application has been submitted, adding controls, redesigning the project, or conducting a refined modeling exercise. Historically this has caused construction delays. For these reasons we encourage you to conduct the screening analysis for your project.

This guidance is not intended for industries whose emissions are predominately fugitive particulates, specifically limestone quarry operations, sand and gravel operations, concrete batch plants, grain and fertilizer handling processes, or asphalt plants. Permit reviewers use a set of nomograph calculations specifically developed to address these situations. The nomographs do a much better job of estimating the impact of fugitive sources. If you are permitting one of these operations you can expect permit review staff to perform an air quality analysis using these nomographs, so do not proceed with SCREEN3 modeling for the projects listed above.

This guidance is also not intended for installations that have permit conditions limiting emissions based on previous refined modeling. For expansions at these facilities, the Air Pollution Control Program (APCP) requires that you add the new source to the previous refined modeling exercise, and submit a revised modeling report.

The APCP also reserves the right to apply best engineering judgement for all screening analyses. Even if you closely follow this guidance, there will be times when APCP may have to revise your analysis. This is particularly true for locations that have complex source situations or existing air quality problems. The screening tools are not well suited for situations involving high background concentrations.

You can perform the SCREEN3 analysis yourself. All you need is some patience to read this guidance, a modest level of proficiency with the personal computer, and Internet access. Performing a screening analysis for the first time should take no longer than four or five hours. As with all things, the first time is the hardest. Take your time, read this guidance, and experiment with the model, and you will soon have a better understanding of the impact your facility has on the air quality of you and your neighbors.

Software and Tutorials:

Download the following files:

- SCREEN3 User's Guide (EPA-454/B-95-004):
<http://www.epa.gov/scram001/userg/screen/screen3d.pdf>
- SCREEN3 Model: <http://www.epa.gov/scram001/models/screen/screen3.zip>
(Download SCREEN3.zip, the executable source code for the model.)
- TSCREEN modeling tutorials:
http://www.epa.gov/scram001/dispersion_screening.htm (This tutorial is somewhat useful and contains step-by-step modeling procedures. Although the tutorial is for the older SCREEN2 model and some of the statements regarding model formulation are out-of-date, the overall modeling recommendations are applicable for SCREEN3.)

After decompressing (Extracting) all of the files, run the model. Some people find the tutorial useful. Other people find that the tutorial is not very helpful and read through the *User's Guide*.

When you run the SCREEN3 model you will be prompted for inputs. The inputs are typically in metric units, so you will have to be ready to do a number of unit conversions. For practice, try typing in fictional inputs to familiarize yourself with the model. It shouldn't take you long before you are familiar with the input and output screens.

Modeling Considerations:

Emissions. Maximum controlled emission rates, based on maximum hourly design should be input to the model. The short-term (grams/second) emission rate should reflect activities that occur during a maximum production hour. If the analysis fails at this rate, you may want to consider installing additional emission controls. Another option may be to model at lower conditioned emission rates if you are willing to accept lower emission rates as permit conditions. Permit conditions based on air quality analyses are typically established on a daily basis. For some HAPs shorter averaging time frames may be considered depending on the averaging times of the Risk Assessment Levels (RALs). If there are several different emission scenarios of concern and it's not obvious which would be controlling, it may be appropriate to perform several SCREEN3 runs that look at different operating scenarios.

Receptors. For SCREEN3 modeling use the "automated distance array option" so the model's iteration routine can locate the maximum value, which is almost always between

two of the receptors in the automated array. For the compliance demonstration, only those receptors in ambient air need to be considered. Receptors on property under your control (owned or under lease) are not considered ambient so long as you maintain control of the property. Also, for screen modeling purposes only, the distance to ambient air can include public right-of-ways. For instance, if your process is located 50 meters from a road, and the road is 30 meters wide, your distance to ambient air is $50+30=80$ meters. For screening purposes this method of determining distance to ambient air holds even if you own property on both sides of the road. For instance, if you own property on both sides of a road, then the road is not considered ambient air.

This guidance is not intended for analyses involving complex terrain (the situation in which the elevation of the surrounding land is higher than the elevation of the emission point). SCREEN3 does have routines that allow you to estimate the impact of emissions for these types of situations, but for those cases the air quality screening analyses is best left to the permit reviewer.

Rural versus Urban. Please choose the Rural option.

Selection of Meteorology. Follow the recommendations in the SCREEN3 Model User's Guide and use the "full meteorology" option.

Background Concentrations. For the purposes of a screening analysis no background needs to be considered.

Multiplying Factors. The SCREEN3 model generates 1-hour concentration estimates. Initially, the 1-hour average estimates may be compared directly to ambient air standards. If compliance is not shown for a given averaging period, the 1-hour averages may be converted to a longer averaging period using the guidance below.

POINT SOURCES AND FLARES: For "points" and "flares," use the multiplying factors shown in Table 1 to convert 1-hour concentration estimates from SCREEN3 to other averaging periods.

Table 1. "POINT" source multiplying factors to convert 1-hour average concentration estimates from the SCREEN3 model to longer averaging periods.

Averaging Period	EPA Multiplying Factor for POINT Sources ^a
3 hours	0.9
8 hours	0.7
24 hours	0.4
Annual	0.08
^a Screening Procedures for Estimating the Air Quality Impact of Stationary Sources, Revised	

VOLUME SOURCES: EPA has not developed multiplying factors for "volume" sources. Volume sources should not be modeled using the screen model approach. Follow the recommendations in the first paragraph under "AREA SOURCES."

AREA SOURCES: EPA has not developed multiplying factors for "area" sources. For fugitive sources modeled with the "area" source algorithm in SCREEN3, EPA guidance recommends that the maximum 1-hour concentration be conservatively assumed to apply to averaging periods out to 24-hours. APCP realizes that, in most cases, it is very conservative to assume that 1-hour average concentration estimates are the same as 24-hour estimates. Thus, professional judgement must be used to decide if this assumption is valid. If compliance with an annual standard is believed to be an issue, then refined modeling (e.g., ISC3) may be necessary.

Contributions from Other Sources. When performing a screening analysis for HAPs, only the HAP contributions of your project need to be considered. HAP emissions from neighboring sources, or even previously permitted sources at your installation can be ignored for the purposes of a screening analysis.

When performing a screening analysis for a particular criteria pollutant you must consider the contribution of other emission points at your installation.

When screen modeling more than one emission point, proceed as follows (look at the example on the last page):

- 1.) For each emission point at your installation note the distance to the nearest ambient location, either your property line or across the public right-of-way (see receptor discussion above). Sketch the plant layout noting these distances and draw a line from each emission point to the nearest property line.
- 2.) Using SCREEN3 identify the distance to the maximum ambient (not on your property) concentration for each of your emission points, and note the concentration. For each source on the sketch extend the line from the emission point to the nearest fence line out to the maximum ambient impact distance. For each of your emission points you will now have two primary receptor locations, the nearest ambient air and the location of highest individual impact (sometimes this happens to be the same location).

- 3.) Sketch and determine the distance of all emission points to each primary receptor location. This information is best presented in tabular form. Again see the example.
- 4.) Using SCREEN3 determine the contribution of each emission point to each primary receptor, and record the results in the table.
- 5.) Add the contribution of each source to determine the total impact at the primary receptors.
- 6.) Do all of the primary receptors meet the air quality test?

Building Downwash. If a stack is within a building's "area of influence" (i.e., a distance of five times the lesser of the building's height or maximum projected width), the stack might be influenced by the wake of the building. If so, it's necessary to obtain or estimate building dimensions (e.g., height, width, and length) to run SCREEN3. ***Sources subject to aerodynamic turbulence induced by nearby buildings and structures must use the building downwash options in SCREEN3.*** Refer to EPA's tutorial for example modeling exercises for sources with building downwash.

Conversion of NO_x to NO₂. A default factor of 0.9 may be used to convert a NO_x concentration estimate to an estimate of NO₂ (NO_x*0.9= NO₂)

Modeling Methodology for "Fugitive" Sources. Whenever possible try to model emissions as point sources. For example if there are fugitive emissions inside a vented building, use the vent parameters and model the source as a point source. There are times however, when this is not possible. For those situations professional judgement must be used on a case-by-case basis to develop the inputs to SCREEN3 for fugitive sources. Select ***area source*** as the source type. The maximum controlled emission rate should be modeled. The short-term emission rate should reflect activities that occur during a maximum production hour. If the analysis fails the emission test at this rate, you may model at lower conditioned emission rates if you are willing to accept lower emission rates as permit conditions. Divide the total emission rate (in units of grams per second) by the area (in units of m²) to calculate the emission rate in units of grams per second per meter squared. Use your best judgement of the actual release height of the fugitive emissions as the input for release height. Use your best judgement of the length and width of the emission source. Select the "full meteorology" and the "simple terrain" options. Use the "automated distance array" option. Remember that the receptor distances in SCREEN3 are measured from the ***center*** of the rectangular area, not from the edge. This is important in determining which receptors are located in "ambient air." Refer to the section on "Multiplying Factors" for recommendations on how to convert 1-hour SCREEN3 estimates to the longer averaging times. For installations with multiple sources the screening results of an area source must be combined with the other contributing sources as described in the section on "Contributions from Other Sources."

Air Quality Test. Once an impact (concentration) has been calculated you must compare it to the standard. Make sure you have converted the SCREEN3 output to the appropriate averaging time (see multiplying factors above). 10 CSR10-6.010 *Ambient Air Quality Standards* establishes the air quality standards for several of the more common

pollutants. A table of these standards is included in the Supplemental Information Package. For HAPs you should look at a different table included in the Supplemental Information Package. You should compare the ambient impact of your project to the Risk Assessment Levels (RALs). If the impact of your project is over the RAL, we strongly recommend that you consider modifying your application. This may include adding emission controls, accepting an emission rate limit, or moving the emission point farther from the property line. The APCP will not issue permits for projects that will have an ambient air impact greater than the RAL.

Modeling Submission:

After you have performed the modeling you will need to document and submit it for our review. The following is a list of materials related to screen modeling to be included with your application:

- (a) Form 1.3 provides a Plant Layout Diagram to scale showing the property boundary or fence line, proposed emission sources, and all buildings [see Forms and Instructions]. Provide the ***height, width, and length*** of all buildings. Locate all emission points, stacks and vents, and building locations, and property boundary distances to some point of reference.
- (b) Form 2.0 provides ***stack/vent parameters*** (emission rates, stack height, stack diameter, stack gas exit velocity, stack gas exit temperature) for each new emission point. Provide parameters for area sources such as source dimensions and release heights. Provide similar information for existing sources at the facility if a cumulative impact analysis is required.
- (c) ***Modeling input/output files*** on diskette. The cover letter on the application should identify the file names.
- (d) A ***modeling report*** that justifies key modeling parameters and assumptions, databases, and your results showing a comparison of the modeled concentration to the standard. When modeling more than one emission point you should include your sketch showing the primary receptors. Your report should clearly identify any emission limitations assumed in the modeling, so the reviewer can craft an appropriate permit condition. A well-organized modeling report will help the staff reviewer, and help to get your permit reviewed more quickly.

SCREEN MODELING EXAMPLE

ABC Corporation, Inc.
1605 West Ash
Bigville, Missouri 63666

This project involves the installation of a spunbound process for the manufacture of a non-woven mat type product. Plastic chips are melted and extruded through a spinning section onto a web, which is then cooled and dried forming the product. The process emits several HAPs, but for the purpose of this example we will only examine formaldehyde (CAS 50-00-0). Stack testing had been performed on a similar unit, and this information was used to estimate emissions from various points in the process as shown in the following table:

	Emission Rate (grams/sec)	Stack Height (meters)	Stack Diameter (meters)	Stack Velocity (meters/sec)	Stack Gas Temperature (Kelvin)
EP1 Spinneret	0.00110	14.17	0.15	7.86	423
EP2 Web Forming	0.0833	14.50	2.00	8.85	305
EP3 Drying Process	0.0400	7.32	0.75	7.89	444

The first two processes are located in one building and the EP1 and EP2 stacks exit the roof of the building. The building is 12.2 meters tall. The shorter side (minimum horizontal building dimension) of the building is 19.1 meters and the longer side (maximum horizontal building dimension) of the building is 34.3 meters. No buildings are near EP3, so building downwash is not a concern for this emission point.

- 1.) Locate Property Boundary Primary Receptors for each emission point. See the plant layout diagram. These are labeled as R1A, R2A, and R3A. Notice that the primary receptors are across the street from the emission points.
- 2.) Run SCREEN3 for each emission point to find the distance to the greatest concentration. Remember for EP1 and EP2 to use the building downwash option. These locations are labeled on the plant layout diagram as R1B, R2B, and R3B. For EP1 notice that the distance to the maximum concentration occurs at the property boundary.
- 3.) Note the distances from each emission point to each primary as in the following table:

	Distances from Emission Point to Primary Receptors (meters)					
Emission Points	Receptor R1A	Receptor R1B	Receptor R2A	Receptor R2B	Receptor R3A	Receptor R3B
EP1	68	68	71	101	245	254
EP2	68	68	61	92	230	238
EP3	213	213	203	231	102	111

- 4.) Run the screen model for each emission point at the needed distances to develop the following modeling results. Remember to use building downwash options for EP1 and EP2. The modeling outputs are in units of micrograms per cubic meter as a one-hour average. Since the RAL for Formaldehyde is 24-hours, use a multiplying factor of 0.4.

	Concentrations (micrograms per cubic meter – 24-hour average)					
Emission Points	Receptor R1A	Receptor R1B	Receptor R2A	Receptor R2B	Receptor R3A	Receptor R3B
EP1	0.8436	0.8436	0.8252	0.8188	0.4476	0.4344
EP2	6.996	6.996	6.532	8.176	4.044	3.978
EP3	1.424	1.424	1.442	1.379	1.555	1.579
Sum	9.264	9.264	8.799	10.37	6.047	5.991
RAL (24-hr)	0.8	0.8	0.8	0.8	0.8	0.8
SMAL (24-hr)	8.0	8.0	8.0	8.0	8.0	8.0

Obviously, the sum of the impacts show that this project exceeds the SMAL at several receptors, so the project is not approvable. In this example let's assume that the applicant plans to install a thermal oxidizer for control of EP1 and EP2. The oxidizer has an overall control efficiency of 95%, and both gas streams are treated. We'll now refer to this emission point as EP12.

- 5.) After redesign the new information is as follows:

	Emission Rate (grams/sec)	Stack Height (meters)	Stack Diameter (meters)	Stack Velocity (meters/sec)	Gas Temperature (Kelvin)
EP12 Spinneret & Web Forming	0.00422	14.8	2.13	8.47	490
EP3 Drying Process	0.0400	7.32	0.75	7.89	444

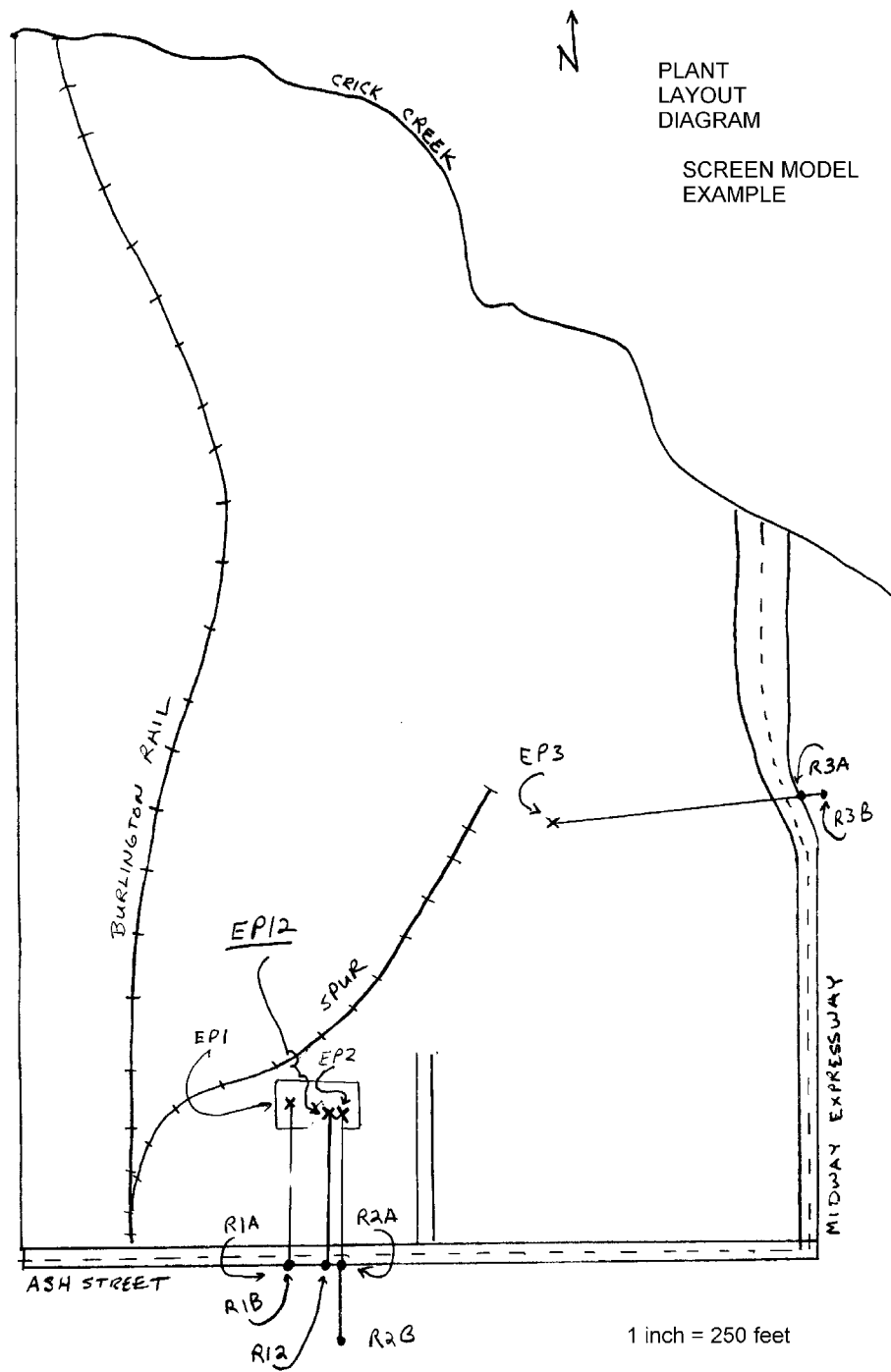
- 6.) Run SCREEN3 again for each emission point to find the distance to the greatest concentration for EP12. Remember to use the building downwash option. In this case the distance to the maximum concentration occurs at the property line. The distances are as follows:

	Distances from Emission Point to Primary Receptors (meters)		
Emission Points	Receptor R12	Receptor R3A	Receptor R3B
EP12	68	235	243
EP3	206	102	111

- 7.) Use SCREEN3 to develop the following results. Again use the building downwash options for EP12, and use a multiplying factor of 0.4 to convert hourly results to average 24-hour.

	Concentrations (micrograms per cubic meter – 24-hour average)		
Emission Points	Receptor R12	Receptor R3A	Receptor R3B
EP12	0.1945	0.06968	0.06660
EP3	1.437	1.555	1.579
Sum	1.632	1.625	1.646
RAL (24-hr)	0.8	0.8.	0.8
SMAL (24-hr)	8.0	8.0	8.0

- 8.) The impact at each primary receptor is now below the SMAL. The project is approvable, but the body of the permit will note that the impact of this project exceeds the RAL.



STANDARD INDUSTRIAL CLASSIFICATION

MAJOR GROUPS

A. Division A: Agriculture, Forestry, And Fishing

- Major Group 01: Agricultural Production Crops
- Major Group 02: Agricultural Production Livestock And Animal Specialties
- Major Group 07: Agricultural Services
- Major Group 08: Forestry
- Major Group 09: Fishing, Hunting, And Trapping

B. Division B: Mining

- Major Group 10: Metal Mining
- Major Group 12: Coal Mining
- Major Group 13: Oil And Gas Extraction
- Major Group 14: Mining And Quarrying Of Nonmetallic Minerals, Except Fuels

C. Division C: Construction

- Major Group 15: Building Construction General Contractors And Operative Builders
- Major Group 16: Heavy Construction Other Than Building Construction Contractors
- Major Group 17: Construction Special Trade Contractors

D. Division D: Manufacturing

- Major Group 20: - Food And Kindred Products
- Major Group 21: Tobacco Products
- Major Group 22: Textile Mill Products
- Major Group 23: Apparel And Other Finished Products Made From Fabrics And Similar Materials
- Major Group 24: Lumber And Wood Products, Except Furniture
- Major Group 25: Furniture And Fixtures
- Major Group 26: Paper And Allied Products
- Major Group 27: Printing, Publishing, And Allied Industries
- Major Group 28: Chemicals And Allied Products
- Major Group 29: Petroleum Refining And Related Industries

- Major Group 30: Rubber And Miscellaneous Plastics Products
- Major Group 31: Leather And Leather Products
- Major Group 32: Stone, Clay, Glass, And Concrete Products
- Major Group 33: Primary Metal Industries
- Major Group 34: Fabricated Metal Products, Except Machinery And Transportation Equipment
- Major Group 35: Industrial And Commercial Machinery And Computer Equipment
- Major Group 36: Electronic And Other Electrical Equipment And Components, Except Computer Equipment
- Major Group 37: Transportation Equipment
- Major Group 38: Measuring, Analyzing, And Controlling Instruments; Photographic, Medical And Optical Goods; Watches And Clocks
- Major Group 39: Miscellaneous Manufacturing Industries

E. Division E: Transportation, Communications, Electric, Gas, And Sanitary Services

- Major Group 40: Railroad Transportation
- Major Group 41: Local And Suburban Transit And Interurban Highway Passenger Transportation
- Major Group 42: Motor Freight Transportation And Warehousing
- Major Group 43: United States Postal Service
- Major Group 44: Water Transportation
- Major Group 45: Transportation By Air
- Major Group 46: Pipelines, Except Natural Gas
- Major Group 47: Transportation Services
- Major Group 48: Communications
- Major Group 49: Electric, Gas, And Sanitary Services

F. Division F: Wholesale Trade

- Major Group 50: Wholesale Trade-durable Goods
- Major Group 51: Wholesale Trade-non-durable Goods

G. Division G: Retail Trade

- Major Group 52: Building Materials, Hardware, Garden Supply, And Mobile Home Dealers
- Major Group 53: General Merchandise Stores
- Major Group 54: Food Stores

- Major Group 55: Automotive Dealers And Gasoline Service Stations
- Major Group 56: Apparel And Accessory Stores
- Major Group 57: Home Furniture, Furnishings, And Equipment Stores
- Major Group 58: Eating And Drinking Places
- Major Group 59: Miscellaneous Retail

H. Division H: Finance, Insurance, And Real Estate

- Major Group 60: Depository Institutions
- Major Group 61: Non-depository Credit Institutions
- Major Group 62: Security And Commodity Brokers, Dealers, Exchanges, And Services
- Major Group 63: Insurance Carriers
- Major Group 64: Insurance Agents, Brokers, And Service
- Major Group 65: Real Estate
- Major Group 67: Holding And Other Investment Offices

I. Division I: Services

- Major Group 70: Hotels, Rooming Houses, Camps, And Other Lodging Places
- Major Group 72: Personal Services
- Major Group 73: Business Services
- Major Group 75: Automotive Repair, Services, And Parking
- Major Group 76: Miscellaneous Repair Services
- Major Group 78: Motion Pictures
- Major Group 79: Amusement And Recreation Services
- Major Group 80: Health Services
- Major Group 81: Legal Services
- Major Group 82: Educational Services
- Major Group 83: Social Services
- Major Group 84: Museums, Art Galleries, And Botanical And Zoological Gardens
- Major Group 86: Membership Organizations
- Major Group 87: Engineering, Accounting, Research, Management, And Related Services
- Major Group 88: Private Households

J. Division J: Public Administration

- Major Group 91: Executive, Legislative, And General Government, Except Finance
- Major Group 92: Justice, Public Order, And Safety

- Major Group 93: Public Finance, Taxation, And Monetary Policy
- Major Group 94: Administration Of Human Resource Programs
- Major Group 95: Administration Of Environmental Quality And Housing Programs
- Major Group 96: Administration Of Economic Programs
- Major Group 97: National Security And International Affairs
- Major Group 99: Nonclassifiable Establishments

LIST OF NAMED INSTALLATIONS

1. Coal cleaning plants (with thermal dryers);
2. Kraft pulp mills;
3. Portland cement plants;
4. Primary zinc smelters;
5. Iron and steel mills;
6. Primary aluminum ore reduction plants;
7. Primary copper smelters;
8. Municipal incinerators capable of charging more than 250 tons of refuse per day;
9. Hydrofluoric, sulfuric, or nitric acid plants;
10. Petroleum refineries;
11. Lime plants;
12. Phosphate rock processing plants;
13. Coke oven batteries;
14. Sulfur recovery plants;
15. Carbon black plants (furnace process);
16. Primary lead smelters;
17. Fuel conversion plants;
18. Sintering plants;
19. Secondary metal production plants;
20. Chemical process plants;
21. Fossil-fuel boilers (or combination thereof) totaling more than 250 million British Thermal Units per hour heat input;
22. Petroleum storage and transfer facilities with a capacity exceeding 300,000 barrels;
23. Taconite ore processing facilities;
24. Glass fiber processing plants;
25. Charcoal production facilities;
26. Fossil-fuel fired steam electric plants of more than 250 million British Thermal Units per hour heat input;
27. Any other stationary source category, which, as of August 7, 1980, is being regulated under section 111 or 112 of the Act.

MAXIMUM ACHIEVABLE CONTROL TECHNOLOGY

Titles of 40 CFR Part 63 - National Emission Standards for Hazardous Air Pollutants for Source Categories

A table of final MACT rules can be found at the following website:

<http://www.epa.gov/ttn/atw/mactfnl.html>

For a list of MACT rules in alphabetical order

<http://www.epa.gov/ttn/atw/mactfnlalph.html>

Technology Transfer Network Air Toxics Website

<http://www.epa.gov/ttn/atw/eparules.html>

NATIONAL EMISSION STANDARDS FOR HAZARDOUS AIR POLLUTANTS

LIST

Titles of 40 CFR Part 61 Subparts

<u>Subpart A</u>	-General Provisions
<u>Subpart B</u>	-National Emission Standards for Radon Emissions From Underground Uranium Mines
<u>Subpart C</u>	-National Emission Standard for Beryllium
<u>Subpart D</u>	-National Emission Standard for Beryllium Rocket Motor Firing
<u>Subpart E</u>	-National Emission Standard for Mercury
<u>Subpart F</u>	-National Emission Standard for Vinyl Chloride
<u>Subpart G</u>	-- [Reserved]
<u>Subpart H</u>	-National Emission Standards for Emissions of Radionuclides Other Than Radon From Department of Energy Facilities
<u>Subpart I</u>	-National Emission Standards for Radionuclide Emissions From Facilities Licensed by the Nuclear Regulatory Commission and Federal Facilities Not Covered by Subpart H
<u>Subpart J</u>	-National Emission Standard for Equipment Leaks (Fugitive Emission Sources) of Benzene
<u>Subpart K</u>	-National Emission Standards for Radionuclide Emissions From Elemental Phosphorus Plants
<u>Subpart L</u>	-National Emission Standard for Benzene Emissions from Coke By-Product Recovery Plants
<u>Subpart M</u>	-National Emission Standard for Asbestos
<u>Subpart N</u>	-National Emission Standard for Inorganic Arsenic Emissions from Glass Manufacturing Plants
<u>Subpart O</u>	-National Emission Standard for Inorganic Arsenic Emissions from Primary Copper Smelters
<u>Subpart P</u>	-National Emission Standard for Inorganic Arsenic Emissions from Arsenic Trioxide and Metallic Arsenic Production Facilities
<u>Subpart Q</u>	-National Emission Standards for Radon Emissions From Department of Energy Facilities
<u>Subpart R</u>	-National Emission Standards for Radon Emissions From Phosphogypsum Stacks
<u>Subpart S</u>	-(proposed 03/07/89) Radon emissions from surface uranium mines
<u>Subpart T</u>	-National Emission Standards for Radon Emissions From the Disposal of Uranium Mill Tailings
<u>Subpart U</u>	-(proposed 03/07/89) Coal fired boilers
<u>Subpart V</u>	-National Emission Standard for Equipment Leaks (Fugitive Emission Sources)
<u>Subpart W</u>	-National Emission Standards for Radon Emissions From Operating Mill Tailings

Subpart Y -National Emission Standard for Benzene Emissions from Benzene
Storage Vessels
Subparts Z – AA -- [Reserved]
Subpart BB -National Emission Standard for Benzene Emissions from Benzene
Transfer Operations
Subparts CC – EE -- [Reserved]
Subpart FF -National Emission Standard for Benzene Waste Operations

NEW SOURCE PERFORMANCE STANDARDS

LIST

Titles of 40 CFR Part 60 Subparts

<u>Subpart A</u>	-General Provisions
<u>Subpart B</u>	-Adoption and Submittal of State Plans for Designated Facilities
<u>Subpart C</u>	-Emission Guidelines and Compliance Times
<u>Subpart Ca</u>	-Emissions Guidelines and Compliance Times for Municipal Waste Combustors
<u>Subpart Cb</u>	-Emission Guidelines and Compliance Times for Municipal Waste Combustors That Are Constructed on or Before December 19, 1995
<u>Subpart Cc</u>	-Emission Guidelines and Compliance Times for Municipal Solid Waste Landfills
<u>Subpart Cd</u>	-Emission Guidelines and Compliance Times for Sulfuric Acid Production Units
<u>Subpart Ce</u>	-Emission Guidelines and Compliance Times for Hospital/Medical/Infectious Waste Incinerators
<u>Subpart D</u>	-Standards of Performance for Fossil-Fuel-Fired Steam Generators for Which Construction Is Commenced After August 17, 1971
<u>Subpart Da</u>	-Standards of Performance for Electric Utility Steam Generating Units for Which Construction Is Commenced After September 18, 1978
<u>Subpart Db</u>	-Standards of Performance for Industrial-Commercial-Institutional Steam Generating Units
<u>Subpart Dc</u>	-Standards of Performance for Small Industrial-Commercial-Institutional Steam Generating Units
<u>Subpart E</u>	-Standards of Performance for Incinerators
<u>Subpart Ea</u>	-Standards of Performance for Municipal Waste Combustors for Which Construction is Commenced After December 20, 1989 and on or Before September 20, 1994
<u>Subpart Eb</u>	-Standards of Performance for Municipal Waste Combustors for Which Construction is Commenced After September 20, 1994
<u>Subpart Ec</u>	-Standards of Performance for Hospital/Medical/Infectious Waste Incinerators for Which Construction Is Commenced After June 20, 1996
<u>Subpart F</u>	-Standards of Performance for Portland Cement Plants
<u>Subpart G</u>	-Standards of Performance for Nitric Acid Plants
<u>Subpart H</u>	-Standards of Performance for Sulfuric Acid Plants
<u>Subpart I</u>	-Standards of Performance for Hot Mix Asphalt Facilities
<u>Subpart J</u>	-Standards of Performance for Petroleum Refineries
<u>Subpart K</u>	-Standards of Performance for Storage Vessels for Petroleum Liquids for Which Construction, Reconstruction, or Modification Commenced After June 11, 1973, and Prior to May 19, 1978

<u>Subpart Ka</u>	-Standards of Performance for Storage Vessels for Petroleum Liquids for Which Construction, Reconstruction, or Modification Commenced After May 18, 1978, and Prior to July 23, 1984
<u>Subpart Kb</u>	-Standards of Performance for Volatile Organic Liquid Storage Vessels (Including Petroleum Liquid Storage Vessels) for Which Construction, Reconstruction, or Modification Commenced after July 23, 1984
<u>Subpart L</u>	-Standards of Performance for Secondary Lead Smelters
<u>Subpart M</u>	-Standards of Performance for Secondary Brass and Bronze Production Plants
<u>Subpart N</u>	-Standards of Performance for Primary Emissions from Basic Oxygen Process Furnaces for Which Construction is Commenced After June 11, 1973
<u>Subpart Na</u>	-Standards of Performance for Secondary Emissions From Basic oxygen Process Steelmaking Facilities for Which Construction Is Commenced After January 20, 1983
<u>Subpart O</u>	-Standards of Performance for Sewage Treatment Plants
<u>Subpart P</u>	-Standards of Performance for Primary Copper Smelters
<u>Subpart Q</u>	-Standards of Performance for Primary Zinc Smelters
<u>Subpart R</u>	-Standards of Performance for Primary Lead Smelters
<u>Subpart S</u>	-Standards of Performance for Primary Aluminum Reduction Plants
<u>Subpart T</u>	-Standards of Performance for the Phosphate Fertilizer Industry: Wet-Process Phosphoric Acid Plants
<u>Subpart U</u>	-Standards of Performance for the Phosphate Fertilizer Industry: Superphosphoric Acid Plants
<u>Subpart V</u>	-Standards of Performance for the Phosphate Fertilizer Industry: Diammonium Phosphate Plants
<u>Subpart W</u>	-Standards of Performance for the Phosphate Fertilizer Industry: Triple Superphosphate Plants
<u>Subpart X</u>	-Standards of Performance for the Phosphate Fertilizer Industry: Granular Triple Superphosphate Storage Facilities
<u>Subpart Y</u>	-Standards of Performance for Coal Preparation Plants
<u>Subpart Z</u>	-Standards of Performance for Ferroalloy Production Facilities
<u>Subpart AA</u>	-Standards of Performance for Steel Plants: Electric Arc Furnaces Constructed After October 21, 1974, and On or Before August 17, 1983
<u>Subpart AAa</u>	-Standards of Performance for Steel Plants: Electric Arc Furnaces and Argon-Oxygen Decarburization Vessels Constructed After August 7, 1983
<u>Subpart BB</u>	-Standards of Performance for Kraft Pulp Mills
<u>Subpart CC</u>	-Standards of Performance for Glass Manufacturing Plants
<u>Subpart DD</u>	-Standards of Performance for Grain Elevators
<u>Subpart EE</u>	-Standards of Performance for Surface Coating of Metal Furniture
<u>Subpart FF</u>	-[Reserved]
<u>Subpart GG</u>	-Standards of Performance for Stationary Gas Turbines
<u>Subpart HH</u>	-Standards of Performance for Lime Manufacturing Plants

<u>Subpart KK</u>	-Standards of Performance for Lead-Acid Battery Manufacturing Plants
<u>Subpart LL</u>	-Standards of Performance for Metallic Mineral Processing plants
<u>Subpart MM</u>	-Standards of Performance for Automobile and Light Duty Truck Surface Coating Operations
<u>Subpart NN</u>	-Standards of Performance for Phosphate Rock Plants
<u>Subpart PP</u>	-Standards of Performance for Ammonium Sulfate Manufacture
<u>Subpart QQ</u>	-Standards of Performance for the Graphic Arts Industry: Publication Rotogravure Printing
<u>Subpart RR</u>	-Standards of Performance for Pressure Sensitive Tape and Label Surface Coating Operations
<u>Subpart SS</u>	-Standards of Performance for Industrial Surface Coating: Large Appliances
<u>Subpart TT</u>	-Standards of Performance for Metal Coil Surface Coating
<u>Subpart UU</u>	-Standards of Performance for Asphalt Processing and Asphalt Roofing Manufacture
<u>Subpart VV</u>	-Standards of Performance for Equipment Leaks of VOC in the Synthetic Organic Chemicals Manufacturing Industry
<u>Subpart WW</u>	-Standards of Performance for the Beverage Can Surface Coating Industry
<u>Subpart XX</u>	-Standards of Performance for Bulk Gasoline Terminals
<u>Subpart AAA</u>	-Standards of Performance for New Residential Wood Heaters
<u>Subpart BBB</u>	-Standards of Performance for the Rubber Tire Manufacturing Industry
<u>Subpart CCC</u>	-[Reserved]
<u>Subpart DDD</u>	-Standards of Performance for Volatile Organic Compound (VOC) Emissions from the Polymer Manufacturing Industry
<u>Subpart EEE</u>	-[Reserved]
<u>Subpart FFF</u>	-Standards of Performance for Flexible Vinyl and Urethane Coating and Printing
<u>Subpart GGG</u>	-Standards of Performance for Equipment Leaks of VOC in Petroleum Refineries
<u>Subpart HHH</u>	Standards of Performance for Synthetic Fiber Production Facilities
<u>Subpart III</u>	-Standards of Performance for Volatile Organic Compound (VOC) Emissions From the Synthetic Organic Chemical Manufacturing Industry (SOCMI) Air Oxidation Unit Processes
<u>Subpart JJJ</u>	-Standards of Performance for Petroleum Dry Cleaners
<u>Subpart KKK</u>	-Standards of Performance for Equipment Leaks of VOC From Onshore Natural Gas Processing Plants
<u>Subpart LLL</u>	-Standards of Performance for Onshore Natural Gas Processing: SO ₂ Emissions
<u>Subpart MMM</u>	-[Reserved]
<u>Subpart NNN</u>	-Standards of Performance for Volatile Organic Compound (VOC) Emissions From Synthetic Organic Chemical Manufacturing Industry (SOCMI) Distillation Operations

Subpart OOO -Standards of Performance for Nonmetallic Mineral Processing Plants

Subpart PPP -Standard of Performance for Wool Fiberglass Insulation Manufacturing Plants

Subpart QQQ -Standards of Performance for VOC Emissions From Petroleum Refinery Wastewater Systems

Subpart RRR -Standards of Performance for Volatile Organic Compound Emissions From Synthetic Organic Chemical Manufacturing Industry (SOCMI) Reactor Processes

Subpart SSS -Standards of Performance for Magnetic Tape Coating Facilities

Subpart TTT -Standards of Performance for Industrial Surface Coating: Surface Coating of Plastic Parts for Business Machines

Subpart UUU -Standards of Performance for Calciners and Dryers in Mineral Industries

Subpart VVV -Standards of Performance for Polymeric Coating of Supporting Substrates Facilities

Subpart WWW -Standards of Performance for Municipal Solid Waste Landfills

Subpart AAAA -Standards of Performance for Small Municipal Waste Combustion Units for Which Commenced After August 30, 1999 or for Which Modifications or Reconstruction is Commenced After June 6, 2001

Subpart BBBB -Emission Guidelines and Compliance Times for Small Municipal Waste Combustion Units Constructed On or Before August 30, 1999

Subpart CCCC -Standards of Performance for Commercial and Industrial Solid Waste Incineration Units for Which Construction is Commenced After November 30, 1999 or for Which Modification or Reconstruction is Commenced After June 1, 2001

Subpart DDDD - Emission Guidelines and Compliance Times for Commercial and Industrial Solid Waste Incineration Units that Commenced Construction On or Before November 30, 1999

Subpart GGGG -[Reserved]

Subpart HHHH - Emission Guidelines and Compliance Times for Coal-Fired Electric Steam Generating Units

Federal Information Procedure System Codes

FIPS	County NAME	FIPS	County NAME	FIPS	County NAME
001	ADAIR	089	HOWARD	177	RAY
003	ANDREW	091	HOWELL	179	REYNOLDS
005	ATCHISON	093	IRON	181	RIPLEY
007	AUDRAIN	095	JACKSON	183	ST. CHARLES
009	BARRY	097	JASPER	185	ST. CLAIR
011	BARTON	099	JEFFERSON	186	STE. GENEVIEVE
013	BATES	101	JOHNSON	187	ST. FRANCOIS
015	BENTON	103	KNOX	189	ST. LOUIS CO.
017	BOLLINGER	105	LACLEDE	195	SALINE
019	BOONE	107	LAFAYETTE	197	SCHUYLER
021	BUCHANAN	109	LAWRENCE	199	SCOTLAND
023	BUTLER	111	LEWIS	201	SCOTT
025	CALDWELL	113	LINCOLN	203	SHANNON
027	CALLAWAY	115	LINN	205	SHELBY
029	CAMDEN	117	LIVINGSTON	207	STODDARD
031	CAPE GIRARDEAU	119	MCDONALD	209	STONE
033	CARROLL	121	MACON	211	SULLIVAN
035	CARTER	123	MADISON	213	TANEY
037	CASS	125	MARIES	215	TEXAS
039	CEDAR	127	MARION	217	VERNON
041	CHARITON	129	MERCER	219	WARREN
043	CHRISTIAN	131	MILLER	221	WASHINGTON
045	CLARK	133	MISSISSIPPI	223	WAYNE
047	CLAY	135	MONITEAU	225	WEBSTER
049	CLINTON	137	MONROE	227	WORTH
051	COLE	139	MONTGOMERY	229	WRIGHT
053	COOPER	141	MORGAN	510	ST. LOUIS CITY
055	CRAWFORD	143	NEW MADRID	777	PORTABLE
057	DADE	145	NEWTON		
059	DALLAS	147	NODAWAY		
061	DAVISS	149	OREGON		
063	DE KALB	151	OSAGE		
065	DENT	153	OZARK		
067	DOUGLAS	155	PEMISCOT		
069	DUNKLIN	157	PERRY		
071	FRANKLIN	159	PETTIS		
073	GASCONADE	161	PHELPS		
075	GENTRY	163	PIKE		
077	GREENE	165	PLATTE		
079	GRUNDY	167	POLK		
081	HARRISON	169	PULASKI		
083	HENRY	171	PUTNAM		
085	HICKORY	173	RALLS		
087	HOLT	175	RANDOLPH		

RESOURCES / REFERENCES

This is a partial listing of Internet and Web-based resources that you can use to find information on Source Classification Codes (SCCs), AP-42 and FIRE Emission Factors, and other data for your permit application. Please note that Web addresses tend to change from time to time, and these web addresses are current as of February 1, 2006. This is only a partial listing and the Web sites listed below are by no means the only resources available on the Internet.

Missouri Department of Natural Resources Home Page

<http://www.dnr.mo.gov/>

Missouri Air Pollution Control Program Home Page

<http://www.dnr.mo.gov/env/apcp/index.html>

Missouri APCP Construction Permits Frequently Asked Questions

<http://www.dnr.mo.gov/faq.htm>

Missouri Environmental Regulations (Title 10) CSR

<http://www.sos.mo.gov/adrules/csr/current/10csr/10csr.asp>

Missouri Register (Publication of New Regulations)

<http://www.sos.mo.gov/adrules/moreg/moreg.asp>

United States Environmental Protection Agency Home Page

<http://www.epa.gov>

CHIEF – AP-42 and Other Estimation References

<http://www.epa.gov/ttn/chief/ap42/index.html>

CHIEF – Source Classification Codes (SCC)

http://www.epa.gov/ttn/chief/codes/scc_feb2004.xls

Directory of TTN Web Sites

<http://www.epa.gov/ttn/index.html>

EFIG Software – Factor Information Retrieval Data System (FIRE)

<http://cfpub.epa.gov/oarweb/index.cfm?action=fire.main>

To learn more about the Emission Factor and Inventory Group and the estimation tools,
contact the Info CHIEF help desk,

Email: info.chief@epamail.epa.gov

Phone: (919) 541-5285

Fax: (919) 541-5680

Address: Info CHIEF

Emission Factor And Inventory Group (MD-14)

Office of Air Quality Planning and Standards

U. S. Environmental Protection Agency

Research Triangle Park, NC 27711